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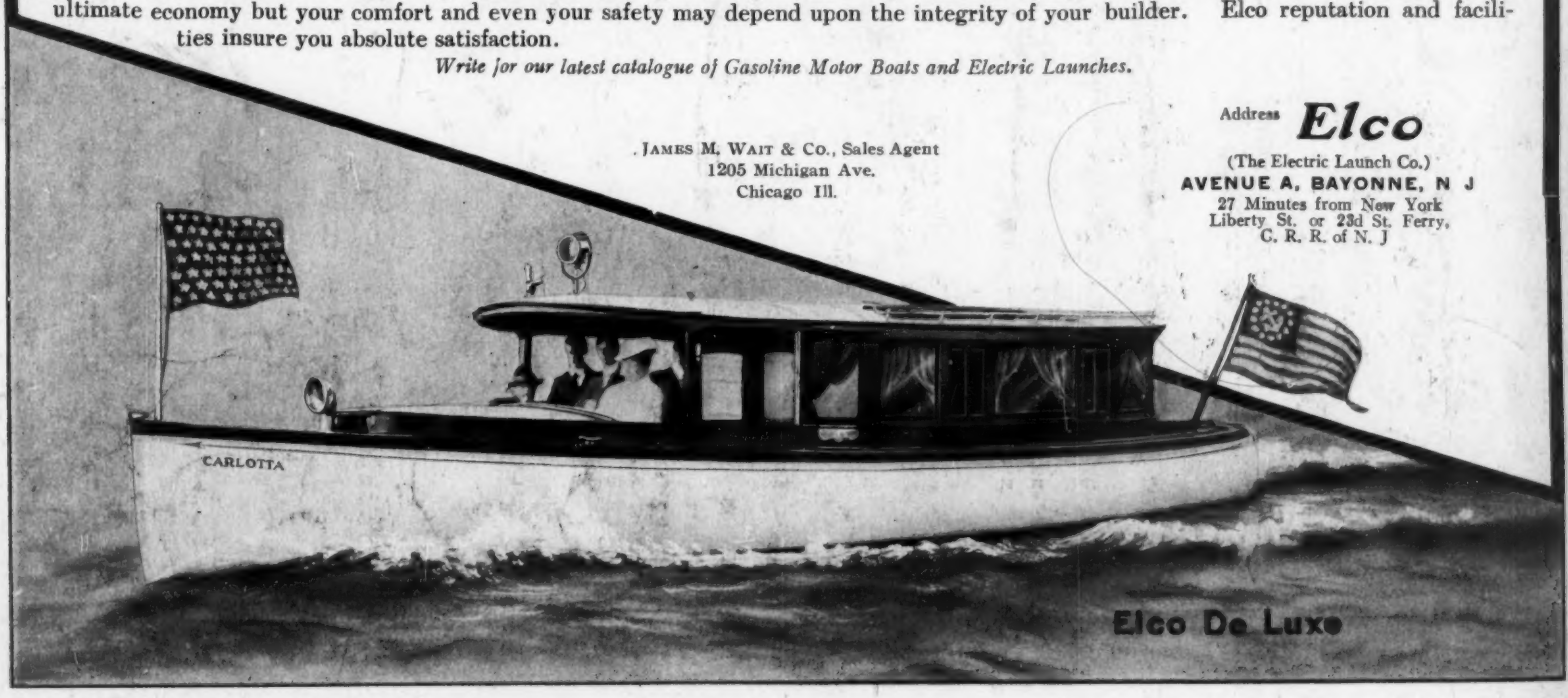

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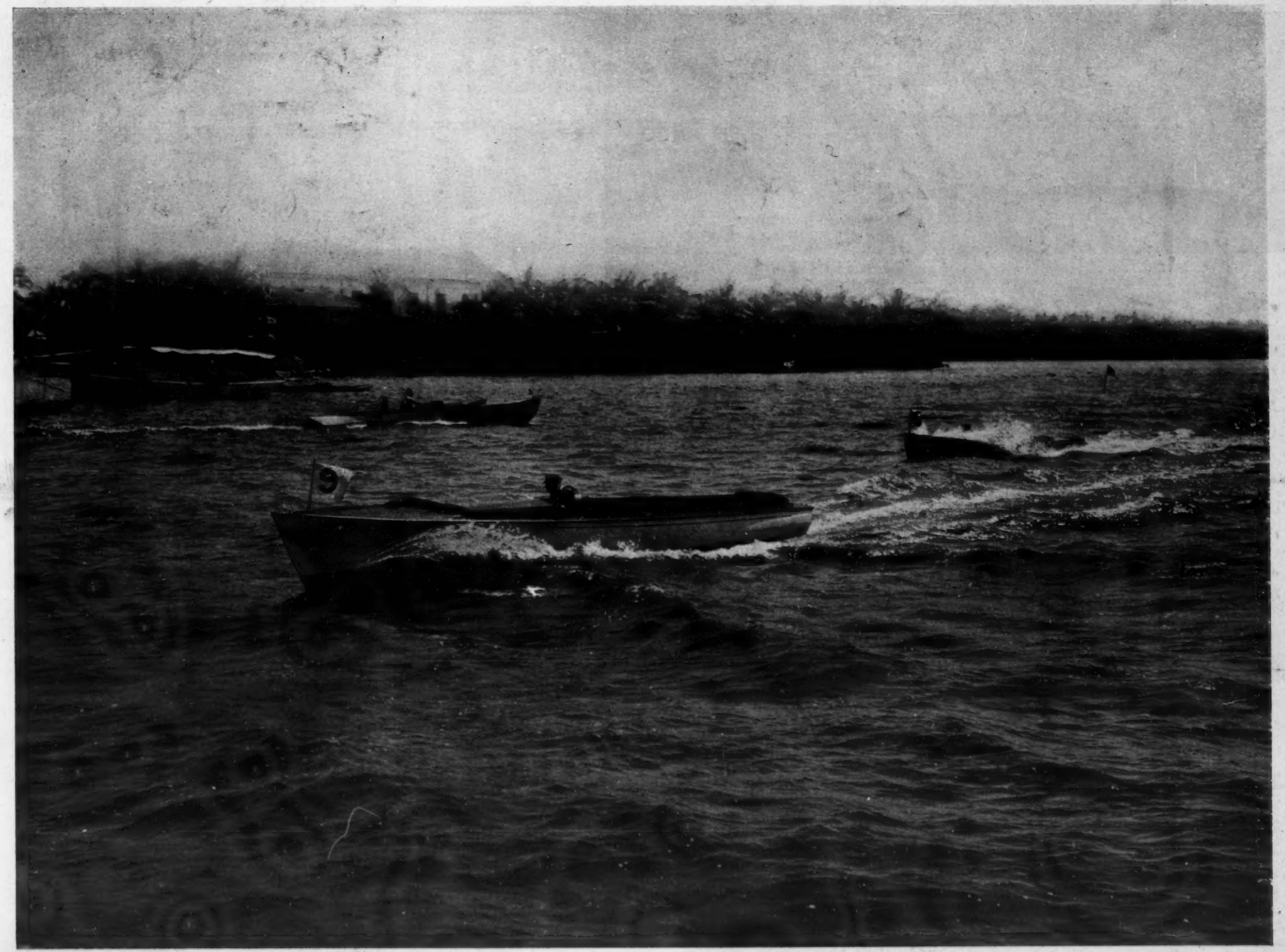


Photograph by Edw. Levick.

MESSENGER GIVING HER BACK-WASH TO KITTY SPARKS II.

YACHTING

VOLUME V. NUMBER 5 — May, 1909 — 25 Cents a Copy $3.00 a Year

THE first gun of the coming season was fired at Palm Beach on the morning of March 16 with the opening of the Fifth Annual Lake Worth Motor Boat Carnival and Races. While a majority of the boats in more northern latitudes had hardly been stripped of their winter coverings, a number of owners of speedy craft, with a desire to be on the water early and a lust for silver mugs, had shipped their boats to the soft airs and hotel-lined banks of Lake Worth to be in at the opening of the Eastern season.

PREPARED FOR A WET TIME. W. J. CONNERS AT THE WHEEL OF BUFFALO COURIER.

On the whole, the entries were not up to the high class seen at some of the previous meets, Dixie and General, of last year, being absent; but there were a number of others of sufficiently high speed to hold the interest of a large crowd of spectators and provide excellent racing for the four days. As last year, the motor-boat fever was in the air. It mingled with the fumes of gasolene and wherever people foregathered, on dock, beach or hotel piazza, the one subject of conversation was the races.

Buffalo Courier and Trente-Sept showed to the best advantage, the former, with an average of over 27½ miles per hour in the 90-mile endurance contest, being the speediest boat at the meet, while the latter, a Florida-built boat, was the most consistent performer and won the largest number of prizes. It was unfortunate that the racing should have been marred by the disqualification on the last day of the meet of Buffalo Courier in the speed record trials for the Palm Beach Cup under circumstances that might lead to the inference of unsportsmanlike action.

The races were held over a course of 4½ nautical miles in length, the two sides being parallel and the ends circular. The endurance run of 90 miles was held over this same course, the distance requiring twenty circuits to be made. It was after winning this endurance run that Buffalo Courier's disqualification in the earlier speed-record trials was announced, the reasons given being the withdrawal of the boat without apparent cause from one of the events in which she had been entered, and the charge made by the regatta committee that she had failed to show her true speed in the speed-record trials for the Palm Beach Cup.

These speed-record trials were over a mile course, the average of six trials being taken. They were the opening event of the regatta, and three boats were entered—Buffalo Courier, Trente-Sept and Bruiser. The former averaged 26.001 statute miles

THE SOLE TOPIC OF CONVERSATION AT PALM BEACH WAS THE RACES.

(she made 27.52 in the endurance race); Trente-Sept did not push her very hard with an average of 23.696 miles, while Bruiser did 22.809 miles. Courier thus won the event handily; but owing to her subsequent disqualification, the prize—the handsome Palm Beach Challenge Cup—went to Trente-Sept. The cup has to be won twice by the same owner before becoming his property.

The handicaps, or time allowance, on the other races were figured in accordance with the ratings under the A. P. B. A. measurement rule for Class A boats, and in accordance with the actual speed performances for Classes B, C, BC, D, E, DE, the endurance run and consolation race. The following is the list of boats entered, their owners and handicaps:

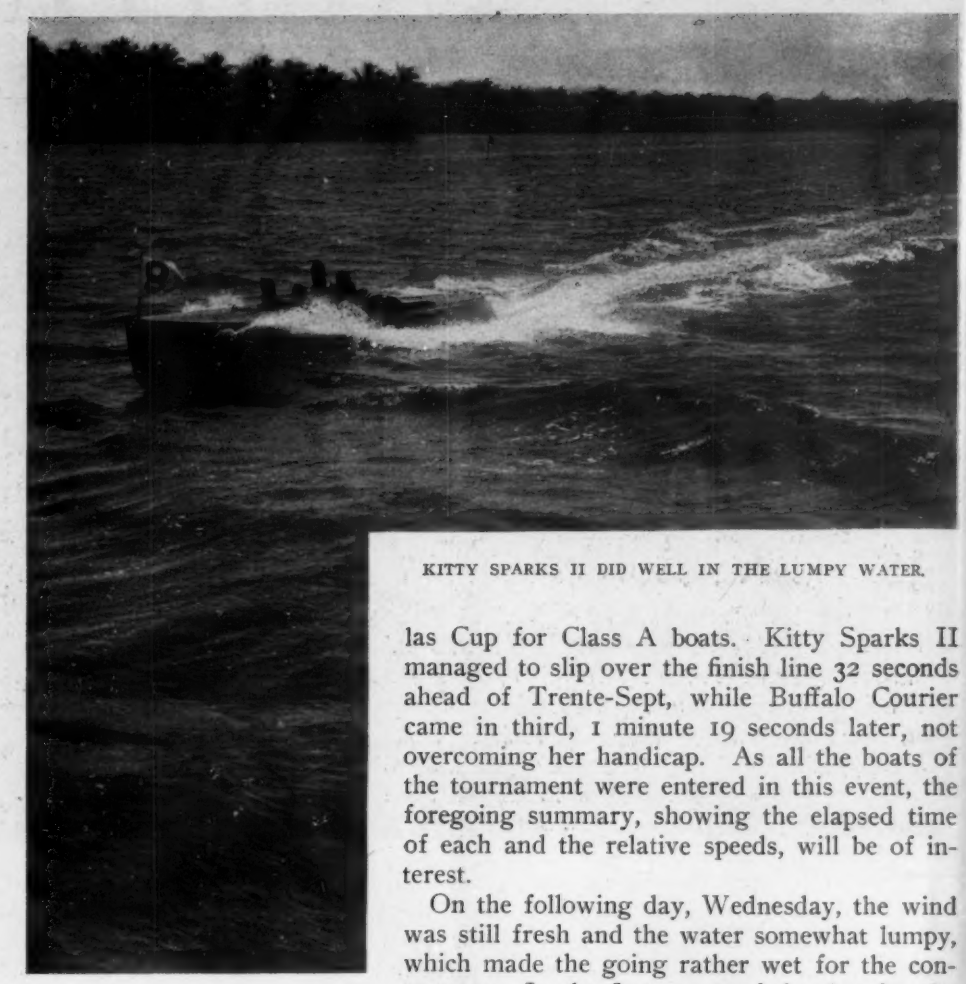
Boat.	Owner.	Yacht Club or Port.	Rating.
Buffalo Courier,	W. J. Conners,	Buffalo M. B. Club	110.7
Trente-Sept,	George Gingras,	Eau Gallie Y. C.	99.46
Bruiser,	George Gingras,	Eau Gallie Y. C.	——
Possum,	Lieut. H. L. Willoughby,	New York Y. C.	74.63
Dennison III,	Chris. Gallagher,	Cape May Y. C.	74.43
Kitty Sparks II,	Charles Furthman,	New York	71.79
Nebo,	G. M. Marshall,	New Smyrna	69.75
Carita,	James K. Clarke,	Palm Beach	68.86
Flying Fish,	Lieut. H. L. Willoughby,	Sewell's Point	64.63
Messenger,	Capt. Geo. E. Andrews,	Gilbert Bar	63.41
Winifred,	Louis S. Clark,	Biscayen Bay Y. C.	55.11

In the 9-mile speed contest for Florida-designed-and-built boats, held the afternoon of the 16th, Trente-Sept had an easy time of it, and won in 27 m. 13 s., with Dennison III second and Possum third. There was a strong wind blowing and the water was somewhat rough at the start of the 9-mile race for the Benjamin Douglas Cup for Class A boats. Kitty Sparks II managed to slip over the finish line 32 seconds ahead of Trente-Sept, while Buffalo Courier came in third, 1 minute 19 seconds later, not overcoming her handicap. As all the boats of the tournament were entered in this event, the foregoing summary, showing the elapsed time of each and the relative speeds, will be of interest.

CLASS A, ALL BOATS, A. P. B. A. HANDICAP.

	Start.	Finish.	Elapsed Time.
Kitty Sparks II	3:39:29	4:13:33	34:04
Trente-Sept	3:46:36	4:14:05	27:29
Buffalo Courier	3:50:30	4:15:24	24:54
Bruiser	3:48:12	4:18:26	30:14
Flying Fish	3:36:00	4:18:27	42:27
Dennison III	3:40:36	4:21:15	40:39
Nebo	3:38:34	4:22:32	43:58
Messenger	3:35:20	4:23:06	47:46
Carita	3:38:09	4:32:08	53:59
*Possum**	3:40:40	4:35:49	55:09
Winifred	3:30:00	4:37:44½	1:07:44½

*Late in starting.



KITTY SPARKS II DID WELL IN THE LUMPY WATER.

On the following day, Wednesday, the wind was still fresh and the water somewhat lumpy, which made the going rather wet for the contestants. In the first event of the day for the Meriden Britannia Cup for boats under 12 miles speed but two boats were entered, Clarita and Winifred. The latter exceeded her handicap allowance by 4 min. 7 sec., which gave the victory to Carita. Both of the other races of the morning furnished lots of excitement, and Trente-Sept had a great day of it, winning both events. In the first, Nebo crossed the finish line 34 seconds ahead of Trente-Sept, but was disqualified for having crossed the starting line ahead of time. Flying Fish finished a close third. In the other event, Class B-C, for the Greenleaf and Crosby prize, Bruiser was penalized 22 seconds for exceeding her handicap, which forced her back into second place and gave the race to Trente-Sept. Buffalo Courier could not overcome her handicap in this event.

The race of the afternoon for the White Rock Cup, distance 9 miles, brought together the speediest boats at the meet and at-

BUFFALO COURIER IN THE 90-MILE ENDURANCE RUN, ON WHICH SHE AVERAGED 27.52 MILES PER HOUR.

tracted the greatest interest among the spectators. After a cracking good race, in which Buffalo Courier, after starting last, overhauled all the other boats and finally finished 54 seconds ahead of Bruiser, it was found that the former had exceeded her handicap by just 54 seconds, and the two boats were thus tied for first place. Flying Fish came in third, 9 seconds later, while Trente-Sept, Kitty Sparks II and Messenger finished in the order named. In running off the tie the next day, Buffalo Courier beat Bruiser by the small margin of 6 seconds.

There were five other contests on the card the next day, and again Trente-Sept made the best showing, though at all times Buffalo Courier pressed her closely whenever they came together. The results of the various races follow:

4½ MILES, CLASS D, BOATS UNDER 17 MILES SPEED.
For Black and White Cup.

	Start.	Finish.	Elapsed Time.
Nebo	11:02:19	11:23:27	21:08
Flying Fish	11:03:16	11:23:44	20:28
Possum	11:03:12	11:23:51	20:39
Dennison III	11:03:50	11:23:18	19:28
Messenger	11:00:00	11:24:34	24:34
Kitty Sparks II	11:06:35	11:24:38	18:03

4½ MILES, CLASS D-E, BOATS OVER 12 MILES SPEED.
For Commodore Harrison B. Moore's Cup.

	Start.	Finish.	Elapsed Time.
Trente-Sept	11:50:35	12:17:35	27:00
Dennison III	11:37:37	12:17:58	40:21
Messenger	11:30:00	12:18:22	48:22
Flying Fish	11:36:29	12:18:31	42:02
Nebo	11:34:38	12:18:46	44:08
Bruiser	11:48:23	12:16:16	27:53
Possum	11:36:21	12:21:28	45:07

9 MILES, CLASS E, OVER 17 MILES SPEED.
For the Association Cup.

	Start.	Finish.	Elap. Time.	Cor. Time.
Trente-Sept	2:45:40	3:12:36	27:56	
Buffalo Courier	2:49:14	3:12:38	23:30	3:12:44*
Bruiser	2:45:00	3:13:28	28:28	

* Corrected 6 seconds.

13½ MILES, CLASS D-E, BOATS OVER 12 MILES.
For the Poland Spring Cup.

	Start.	Finish.	Elapsed Time.
Possum	3:39:36	4:39:40	1:00:04
Messenger	3:30:00	4:39:47	1:09:47
Buffalo Courier	4:06:57	4:41:10	34:13
Kitty Sparks II	3:49:45	4:47:26	51:41
Bruiser	3:53:57	4:41:43	47:46
Dennison III	3:43:30	4:42:03	58:33
Trente-Sept	4:00:57	4:42:14	41:47
Nebo	3:38:03	4:46:39	1:08:36
Flying Fish	3:40:09	Did not finish.	

But two events were scheduled for the last day—the 90-mile endurance race and a consolation race for those boats that had not won at the meet. The weather was ideal and the water smooth as the 90-mile event was started in the morning. The conditions of the race were that the winner was to receive the Beach Club trophy, while the Reed & Barton Cup went to the boat whose time-average varied the least for all the laps. It was a hard, gruelling contest from start to finish, and Buffalo Courier, with a handicap of 3 hours and 14 minutes over the first starter, finished 9 min. 10½ sec. ahead of Messenger. Flying Fish won the consolation race from Bruiser, which race brought the Carnival to a close.

AMORITA LEADING QUISSETTA AROUND STAKEBOAT. TEN YEARS AGO THESE SCHOONERS FURNISHED THE BEST RACING ON THE SOUND.

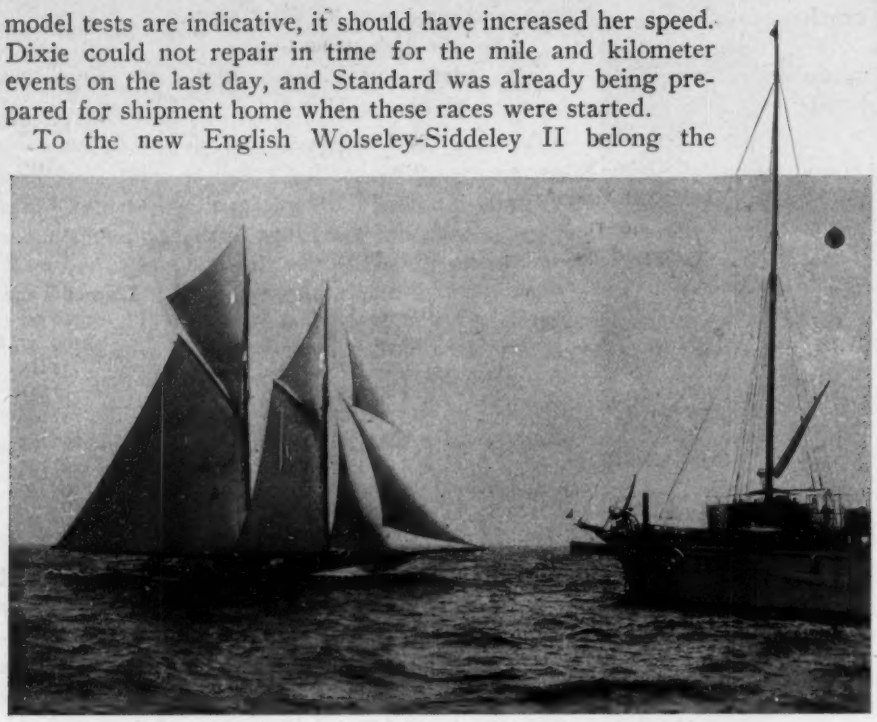
Month in Yachting

FROM our standpoint the results at Monaco were disappointing in the extreme. One almost wonders what we were there for, anyway. In a contest that, from a spectacular point of view, was one of the best ever seen on the classic Mediterranean course, the two American entries never figured. Standard, the untried contestant, started in but one race, the 50-kilometer for the Prize of Monte Carlo, and abandoned that shortly after the start on account of the heavy swell. She was said to have cracked a cylinder before the start of the 100-kilometer race, which prevented her coming to the line in that event.

At no time did Dixie II, of whom much was expected, show the form that she displayed last summer. In the 50-kilometer she finished third, 39 minutes after the British Wolseley-Siddeley II, with an average of only 21.17 miles per hour. In the 100-kilometer for the International Grand Prize she did better, and was in second place up to the thirteenth round, when her water pump burst and she abandoned the contest. Her poor showing may have been due to a heavier sea than she was used to, or to the fact of her having a new hull, which, unfortunately, had not been tried out in this country before she went abroad, though if

model tests are indicative, it should have increased her speed. Dixie could not repair in time for the mile and kilometer events on the last day, and Standard was already being prepared for shipment home when these races were started.

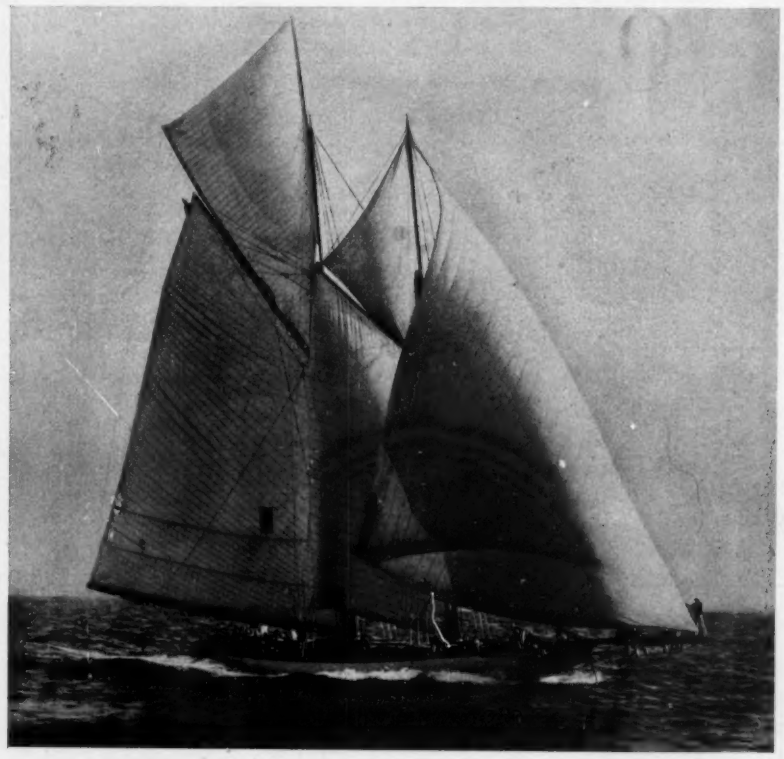
To the new English Wolseley-Siddeley II belong the honors. She won both long-distance events, with a record of 38.01 statute miles per hour in the 50-kilometer and over 39 miles in the 100-kilometer, her time for the latter distance (62.1 miles) being 1:35:09, breaking all records. Panhard-Levassor was her closest competitor. It was a great disappointment for Americans, and we have our work cut out for us if the Harmsworth Cup is to stay here another year. Owing to the impossibility of getting photographs in time, the full account of the Monaco meeting will be reserved for our next issue.



MURIEL WAS ALWAYS ELMINA'S STRONGEST OPPONENT.

With the schooner Amorita as a new addition to the Lake Michigan fleet, yachting will go on with a rush off Chicago next summer. She is larger than the schooner Valmore, which William Hale Thompson sailed to Chicago from New London, Conn., last year, being 69 feet waterline, and will make the winner of the 1908 Mackinac race sail for all that is in her to retain her laurels. Dr. W. L. Baum, of the Chicago Yacht Club, is the new owner of the fleet salt-water fore-and-after, and with Valmore and George Tramel's Vencedor sailing against her there should be sport for kings on the lake in the coming months. Amorita is as classy as one could wish. She was designed by Cary Smith, and ten years ago was the crack schooner of the New York Yacht Club fleet. In those days to name Cary Smith as the designer of a fore-and-aft-rigged craft was to say everything that need have been said in regard to her cup-winning ability. This is true in some measure to-day, only, you see, Queen came along and snatched some of the laurels from Smith creations—temporarily we hope and pray; but aside from this product of the Bristol wizard's genius, our schooners are, so to paraphrase, all to the Smith. Amorita—and Quissetta! What memories they conjure! W. Gould Brokaw owned Amorita, and every time he defeated Quissetta, which was every other day or so, he gave a dinner. Those were merry days. Then came the first Elmina and Muriel; Amorita had no chance with them, and Mr. Brokaw turned his attention to yawls. The late Richard Mansfield then had her for a while. He used her mainly for cruising, but finally got the racing bee and entered her in the Indian Harbor Club's cruising race to New London. She did not figure strongly therein. This was in 1906. A week or two later he appeared in Oyster Bay on the morning of the tri-club cruise up the Sound. Finding that he was making no preparation to get under way in response to the harbor start signal, I went aboard to ask him the why and wherefor. He appeared at the gangway, with his sensitive lips working nervously and his eyes suffused.

"No one seemed to pay any attention to me; no one said anything about my entering, so I am going to stay here," he said. So he did. After his death Frederick M. Hoyt, a fine sailor, had her, and now she has gone West. We may expect to hear that she has taken on a new lease of successful life.



THE FIRST ELMINA. UNTIL SHE CAME ALONG AMORITA HAD THINGS HER OWN WAY.

While on the subject of Chicago it is worth while calling attention to the increased harbor facilities along the lake front, which is said to be largely responsible for the purchase of Amorita, and will lead eventually to the purchase of other Eastern yachts. As a matter of fact, if rumors count for anything, Atlantic seaboard yacht owners will meet interesting bids for their famous boats before very long. Crack racing yachts were never cheaper than now, and the time seems to be ripe to place upon fresh water a number of high-class boats. Tentative inquiries have been made in this city, and there may be developments before long which will make the yachting world open its eyes. Conditions generally are opening up in Chicago, and, beginning with this year, that port is going to take the place it should hold in the yachting affairs of the country.

At last comes the producer-gas yacht. When the British Government placed motors using this fuel in the obsolete battleship Rattler for experimental purposes some months ago, universal interest was enlisted in the results. Eventually came word that the trials were satisfactory. Little enough attention on this side of the water, however, has been given to the fact that for a year or two Lewis Nixon has been making boats propelled by producer-gas engines for South American waters. They have been eminently successful, and thrive well on gas generated from fuel of any sort, from coal to lignites. The new yacht is to be 38 feet waterline and to have an en-

gine of 35 horsepower. Power is generated in a sort of shell-like stove fed with fuel from a hopper. The hot gas is taken out of the producer by a pipe which leads to another cylinder called the scrubber, in which the gas is passed through various sprays, cooled and cleaned of soot, tar and other dirt, whence it passes into a gas and air mixing valve—a carburetor, so to speak—where the inflow into the engine is controlled. The engine uses the gas only as needed, by a suction process, which contributes largely to its economy. Mr. Nixon told me recently that he ran his plant in New Jersey with producer-gas engines at practically one-half the coal consumption involved in the production of an equal amount of steam power, and that its adaptability to crack ocean liners was unquestioned. The main point, so far as power boats are concerned, is that gas from these engines can be produced much more cheaply than gasolene can be purchased. We will watch eagerly this new craft, which is being turned out by a well-known builder of gasolene boats.

The action of the New York Yacht Club regatta committee in doing away with the still water regattas at Glen Cove and scheduling in their place a run from Hempstead Harbor to Newport, with the probable arrangement of a run from the Sound to Bar Harbor, Me., in the annual cruise in August, has put new life into that organization. There will undoubtedly result next season such a racing spirit as this great organization can display when it really gets interested in what it is doing. Neola, lengthened, and faster than ever, they say, will probably be placed in commission. If she is, Effort cannot stay out. Then there will be the two enlarged Avengers which the Herreshoffs are building, the Dorellos, probably, and the 57-footers. Here is a nucleus calculated to warm the heart and inspire the imagination. In fact, with such a schedule as Messrs. Parsons, Lorillard and Kerr have arranged there is no saying what will be in store for yachting enthusiasts this year. All praise to this committee! They have the right idea, and although the carrying out of definite plans which they have formulated involves the necessity of taking more or less attention from business and from other affairs, the results will warrant the time. There never has been anything the matter with the racing element of the New York Yacht Club; a gamer crowd of gallant fellows never spilled wind out of a jib. The trouble has been in the old bogey, tradition. And yet, tradition! Look back to Henrietta, Fleetwing and other yachts of a past day. They furnish sufficient backing of tradition for anything that Commodore James and his assistants may care to do.

A letter from one of the most capable yachtsmen on the Atlantic seaboard came to this office the other day asking why we do not support, instead of consistently criticise, the efforts of the representative yachtsmen who were recently engaged in changing the rules of measurement. The writer held, and reasonably, that the men who had altered the rating were men whose ability was entitled to respect, and that he who held that they were not actuated by the best and broadest interests of the sport were taking an unwarranted position. Well, perhaps so! Certainly there can be no question that the action of these men was based on the highest motives. The only point to be made, and which I made in this department, is the effect of this unceasing tinkering upon yacht construction. Men will not build boats of any size until they are certain the craft upon which they spend thousands of dollars will not be dis-rated in a season or so. Let us have peace—and progress.

In the Vortex of a Hurricane

By WARREN WATSON

Photograph by N. L. Stebbins

NOTE.—This is an account of an actual experience on a large lumber schooner that rode out the hurricane of September, 1906, which swept the Gulf and Lower Florida coast, doing great damage and costing many lives. At the time the author was a foremast hand on the vessel.—EDITOR.

ON the sixteenth of September, 1906, the four-masted schooner Auburnton left Port Arthur, Tex., bound for New York, with a cargo of pine timber, and carrying an 8-foot deck load towering above the rail. The tug cast off the hawser about a mile outside the breakwater, whistled a parting salute, while her crew shouted, "Good luck and a fair wind!" and we were off on the voyage which came so near being our last.

The Auburnton, on which I was serving as a foremast hand, was a typical lumber schooner of the older type, with a long main deck protected by a high rail to enable her to carry a large deck load. A light northeasterly wind gave us a slant off-shore, and that night we put Sabine Bank Light down. The first few days the winds were light and variable, and, deep-loaded as we were, we made less than 60 miles a day.

In the summer months some navigators follow along the Gulf coast for the off-shore wind, while others stand to the south'ard and take the trades off Yucatan Channel, thus getting a fair wind up to the Florida Straits. Our skipper took the latter course, and we had four long days of dead, flat calm, with a temperature day and night of nearly 100 degrees, which had the effect of putting everyone in the ship's company in a bad humor.

All hands were kept at work scraping and painting during the watches on deck, and while below the heat made sleep or rest impossible.

The monotony of those four hot days was fearful. The old man would sit on the stern bitts cursing the luck: "Wind! wind! wind!" he would say, "and no matter how much!" We all were hoping for wind—anything for a change. And we got it.

On the morning of the fifth day of the calm the sun rose in a blaze of red and violet and an easterly breeze sprang up. At noon a wind tree of cirrus clouds was seen to the east'ard, all tapering down to a point on the horizon, and the sky was covered with an ominous haze. Hurricanes are always foretold by the clouds, barometer and sea, and nearly always are preceded by a calm. While at the wheel in the afternoon I heard the old man tell the mate that the glass, which had been steady all day, had commenced to drop, and that we were probably in for a hurricane. Soon after this he ordered him to make all snug for heavy weather.

At four bells the wheel was relieved. We lashed and stowed all that shifts in the lazarette, set up the turnbuckles on the deck load chains, got out spare gear and battened down the lazarette hatches. As the clouds looked more threatening, and as there was every indication of a rapid change, the mate sang out: "Fore topsail clewline!" and one after another all four topsails were clewed up and flying and outer jibs hauled down. A heavy sea was rolling in from the east'ard, one of the surest indications of an approaching hurricane, as the seas travel faster than the whirling body moves onward.

Another sailor and I were ordered to put the gaskets on the head sails, and the seas were so great that, at times, the jibboom was nearly under water, and then was lifted so high that I could see the forefoot shoot clear of the water. Standing on a small hemp foot-rope close to the end of the jibboom, with no chance to brace, my rubber boots so slippery that it was difficult to keep a footing, a heavy sail slatting, and all the while being carried from 40 feet in the air to the surface of the water, made the work extremely difficult.

On returning to the deck the spanker was taken in and tied up. Four men were then ordered aloft to tie up the topsails. Tying up topsails under the best conditions is hard enough, for the reason that they are not taken in until it blows too hard to carry them, or to prepare for an approaching squall; but working aloft, more than a hundred feet above the deck, with a hurricane sea on, the masts rolling down to a 45-degree angle, the vessel jumping and pitching, was both difficult and dangerous. It was impossible to stand on the cross-trees without being thrown off, and our only safety was in winding both feet around the topsail and hauling with both hands on the gasket, which was passed under the hooks and hauled taut. At times I was hanging over the water on one side of the vessel and a moment later was over the water on the other side. Tying up that topsail was a bigger job than furling a royal on a square-rigger, but I got it done finally and went down on deck.

We now put three reefs in the foresail, mainsail and mizzen, and hauled down the jib. The greatest change had taken place while we were reefing, the sky being covered with thick, black nimbus clouds, with scud passing overhead, while the sun had disappeared and lightning began to flash. We no sooner had the last reef tied in the mizzen than a sudden squall from the southeast came swooping down. It struck us abeam, and, as the vessel had no headway on, it hove her well over; but as she gained headway she righted, and in a few minutes the squall passed. Not twenty minutes later a similar squall came from the south'ard and soon passed on. These were the forerunners of what was coming.

The wind now settled in the southeast and gradually freshened, until at two bells it had attained the velocity of a hard gale. The seas grew larger and began breaking over the deck load, three and four feet of solid water rushing over with terrific speed and force. At four bells, the usual time for putting up the side lights, the vessel was rolling and pitching so that it was impossible to put them in the light-boards on the fore rigging, and we were obliged to lash them to the stern davits. It seemed to me at this time as if it were impossible for the wind to blow harder, but it continued to increase in velocity. The captain now hove to on the starboard tack, hoping to get away from the hurricane center. At eight bells it was starboard watch on deck and my lookout; but, as the fo'cas'le deck was most of the time under water, it was impossible for one to stay there.

The wind was simply screeching, and had reached such a velocity that we could no longer show any sail, and it became necessary to take them in or lose them. Great seas were sweeping over the deck load more frequently, and the torrents of rain and the spray were picked up and carried along by the wind with a blinding force that made it well-nigh impossible to get about. The night, too, shut down, and there never was a blacker one. We depended on that sixth sense which is possessed only by sailors to work the vessel. To handle sails under such conditions is nearly impossible.

Following orders to take in the foresail, I was told to stand by the peak halyards, which led to the starboard rigging, which was then the weather side. Slacking away as the mate gave the signal, I was twice knocked to the deck by enormous seas and had the wind taken out of me; but I managed to hold the turn, which prevented me from being dashed against the forward end of the deck load. One of these seas knocked the mate down and carried him into the lee main rigging, by clinging to which he saved himself from being carried overboard. The loose sail was slatting with frightful violence. When it was about half-way down it split from leach to luff, and inside of five minutes every stitch of it was blown out of the bolt-ropes, only the three reefs on the boom remaining.

We then went aft to take in the mizzen. That the wind did not treat the mizzen like the foresail was remarkable; but, as it was a new sail, it withstood the slatting and came down whole. When the mizzen was down the schooner at once began to fall off, as there was no sail aft to keep her head into the wind. It is always a critical moment for a vessel in a seaway when she is being kept off to run before the wind. When the sea comes abeam there is danger of her being boarded by a heavy sea and of losing her deck load, all her men, and of having her fo'cas'le and cabin stove in. Knowing this danger, we all clung to the rigging. A great sea rose up and broke over the vessel, putting her under until it seemed to us, who were half drowned, that she would never rise. She came up slowly, gradually fell off before the wind, and under a forestaysail and three-reefed main was soon running before it at a clip that must have been 16 knots.

Then we all set to work tying up the mizzen. It took the united strength of six men to tie that wild, banging, slatting sail to the boom, the seas breaking over us while we were heaving on the lines. The mate came on deck, reporting four feet of water in the hold, the terrible strain on the vessel having started some seams, and all hands manned the pumps. Three times while we were working at them the seas washed us into the spanker rigging; we thought ourselves lucky to still be aboard.

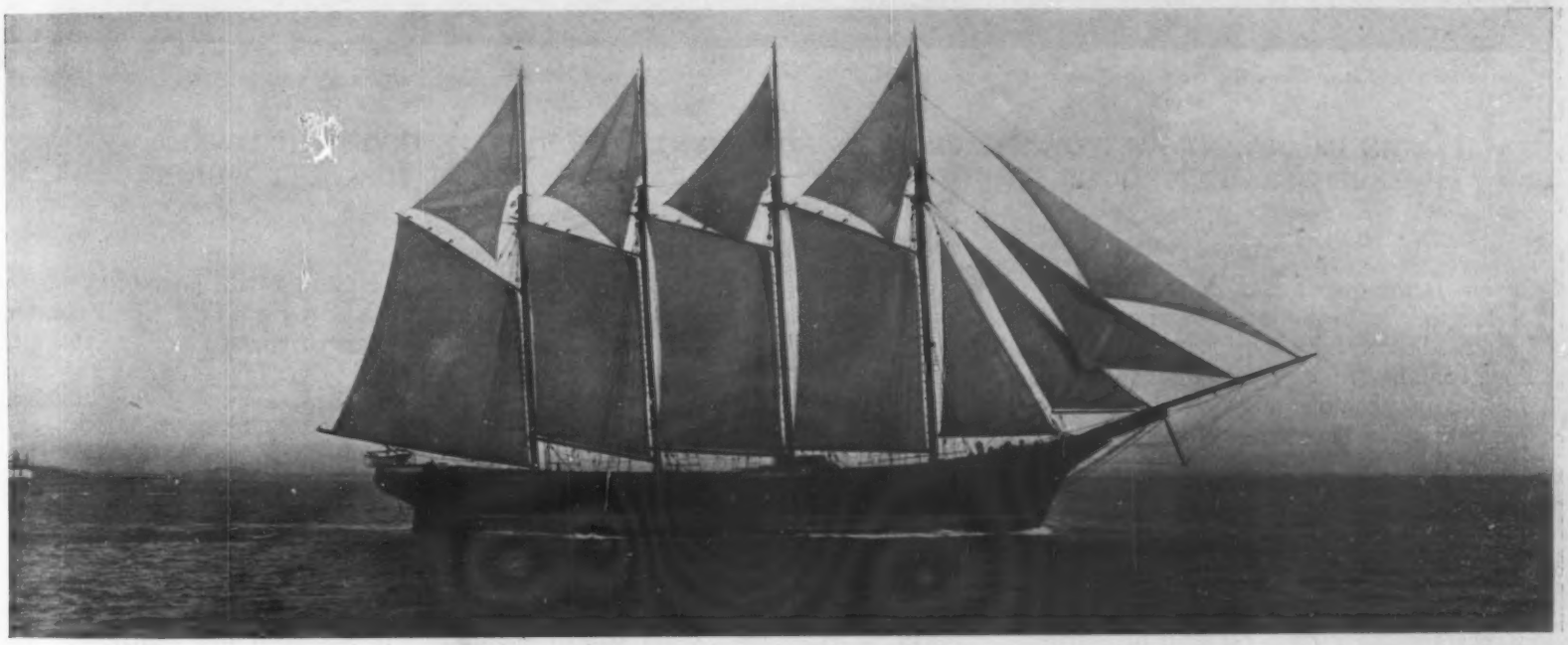
I was sent forward to tell the second mate, who was firing the donkey engine, to hurry on the steam pump, but it turned out that the pump would not work; just when it was needed most it was useless. The trip aft was most perilous. I was able to work my way along only by crawling, keeping a grip on the boom tackles and trusting to luck that I would not be carried overboard. Just as I reached the mainmast the mainsail was blown clean off the spars in one swoop, with a report heard above the howling elements. It takes wind to treat a new mainsail of storm canvas like that! I got aft finally, reported the steam pump not working, and joined the men on the hand pumps. We all realized that our situation was desperate.

At four bells, or ten o'clock at night, the mate shouted in my ear: "Relieve the wheel!" it being my trick at the wheel for the next two hours. When I got aft the old man gave the course as "Keep her dead before it," and added, "Watch her sharp!" A vessel steers the hardest while running before it, and this was the worst trick at the wheel I had while on the schooner, as the wind was constantly shifting and the heavy following sea added to the danger of her broaching to. The force of it was then terrific; it had an actual *cutting* force, and one could not look to windward. But for the protection afforded by the wheel box I could never have stood there, on account of the violent motion of the vessel. One sea larger than the rest broke over the stern, put the binnacle light out, and, picking up the old man, swept him against the after end of the cabin with terrific force. At times the water was up to my waist as I stood at the wheel. At

last the old man said, "Make it eight bells," and the wheel was relieved. Ordinarily the watch on deck is allowed to go below, but no one thought of leaving the deck at such a time; our safety, and that of the vessel, depended upon our exertions. On being relieved, I joined the men at the pumps.

The electrical display at this time was the most wonderful that I have ever seen on land or sea, forked lightning of the queerest shapes darting from the ocean to the heavens, as well as from the sky to the sea. For the last half hour I was at the wheel the wind had not shifted and was steadily increasing; this was a death message, for we were going straight for the hurricane center at a terrific speed, nor did we have any power to alter our course. Our patent side lights, which were supposed to burn through the wildest gale, were blown out, and that was the last we saw of them.

The waves were so high and the force of the wind so great that, in leaving the top of a wave, the vessel seemed to shoot into the air, and often her forward part would be out of water, while a moment later it would be buried, with the jibboom completely under water. Considering her size (she was 200 feet long), this gives an idea of the terrific sea that was running. All this time



"THE AUBURNTON WAS A TYPICAL LUMBER SCHOONER OF THE OLDER TYPE."

we had been working hard at the pumps. Finally, we were driven from them; but, through the efforts of the second mate, the steam pump was then running. I passed the bight of a topsail clewline about my waist and made it fast to the shrouds. We were then near the hurricane center, the strain caused by the wind was actually killing, our eyes were blinded, and breathing was so difficult that I thought I would suffocate. Indeed, we all thought our last hour had come. One enormous sea broke over the stern and rushed over the vessel, tearing away the helmsman from the wheel, carrying him overboard, and sweeping the mate forward into the darkness. In those next ten minutes came the greatest change I have ever experienced; the wind, which must have been blowing at a hundred-odd miles an hour, dropped completely. The hurricane center had reached us. The sky had lightened from an inky black to gray, while overhead was a light spot through which a few stars could be seen. The howling wind could still be heard, but was no longer felt, while occasional flashes of lightning showed the tumult of the waters.

The wind was gone for the time being, but a new enemy had taken its place. The seas, which came from all directions into this center, were as high as could exist. They were sharp and abrupt—a mountainous chop, which, rising to a great height, would curl over, sending hundreds of tons of water crashing onto the vessel's deck. How she ever withstood them I cannot understand. She was pitched and thrown about so violently that one sea heeled her over, and she was given such a sudden lift by another that both her jigger and mizzen topmasts were snapped off short. Fortunately, both cleared the vessel as they fell; but one was lifted by a following sea which sent it through the yawl lashed in the davits, and it came crashing down through the rail, bringing up on the taffrail timber. We were in this hell-spot for about half an hour while we cleared the topmasts from the wire rigging.

We slowly drifted nearer to the howling, screeching whirlwind again. It swooped down on us just as it had left us, and again we were being driven before the full force of the hurricane.

The conditions at this time were simply indescribable. The steam pump was no longer of use, for the fire had been flooded out. We again had to man the hand pumps under the worst possible conditions; but somehow we managed to stick, and during the early morning hours gained slightly on the water in the hold. Day began to break, and for the first time a ray of hope glimmered in our souls. But the snapping of the after deck-chain turnbuckle dispelled this hope; for after the first turnbuckle parted all the others snapped in succession, and in a few minutes the whole of the deck load above the breast chains was loose, the great 10-inch timbers sliding, shooting and rolling in a wicked manner.

The second mate brought up cant dogs, and we set about the hardest and most dangerous work aboard a schooner—getting rid of the deck load when she is nearly rolling her masts out. We took our stations at the rigging, and when she rolled down the timbers would slide over on that side, and by prying on each end a number would go overboard. We had gotten the after part overboard and were working forward, when trouble began. The timbers started shooting fore and aft, and soon the after end of the fo'cas'le was stove in. The cook, who was hard at work with the rest of the crew, lost his balance while prying; the vessel took a plunge, which brought a rolling timber over on him, and his foot and the lower part of his leg were crushed to a jelly. He was dragged out with difficulty by the men on the port side. As I watched them I thought they never would reach the cabin, but

(Continued on page 438.)

Tenders

BY E. T. KEYSER

A tender should always have just the proper amount of line to tow well.

AN IMPORTANT PART OF THE CRUISER'S EQUIPMENT WHICH OFTEN GIVES THE OWNER CONSIDERABLE TROUBLE—HOW THEY SHOULD BE CARRIED AND THE POINTS BY WHICH THEY SHOULD BE JUDGED

IF one is the owner of a power cruiser from 25 to 40 feet in length, the towing qualities of his dinghy are something that must be carefully considered. This is something the bigger fellow, running from 45 feet upwards, whose power tender is not a towing proposition, misses in the way of trouble. It is not enough that the little dinghy be strongly built, handsomely finished, easy and comparatively fast under oars, and possessed of tremendous carrying capacity for her over-all length. If she will not tow straight and true, but yaws from side to side, now running up on her painter, and now holding back on it—as if she were trying to extract a tooth—all the finish, beauty of lines and carrying capacity in the world will not prevent her being a nuisance and the very worst kind of a cruising companion. On the other hand, a tender without any beauty whatsoever that will tow as she ought to tow, never letting you know that she is with you until you want to use her, is worth her weight in gold, and you can afford to overlook a great deal in the way of unattractiveness in appearance.

The hard part of the proposition in selecting a tender lies in the fact that, to the average man, the appearance of a tender, or the price he pays for it, is very little guide—almost none whatever, in fact—as to how she will act at the end of a painter in a quartering sea. That's why it pays to go to the right kind of a concern when the little craft is bought, and make sure she was designed by some one who knows what this style of craft should and should not do when you are trying to make port in bad weather.

To tow to best advantage a dinghy should be cut away somewhat at the fore-foot, so that her stem will not catch the water and cause her to shoot from side to side when she rides upon her painter. Straight-stemmed tenders should be avoided. The stem should either have a fair curve, or the fore-foot may be cut away entirely, showing a long curve from the top of stem piece to the keel about a third of its length from the bow. To get this in flat-bottomed skiffs, they are given plenty of sheer. A properly designed tender will always trim by the stern when empty.

A dinghy costs more than the average row-boat of the same over-all length and finish; and it is only right that she should, for into her ought to go the very best of construction, so that the load she will carry will be out of all proportion to her own weight, and her dryness in a nasty chop will be something wonderful when her size and freeboard are considered.

Now this calls for skill in workmanship, experience in design and the best kind of material, because she must stand service that would, in a very short time, crumble up an ordinary row-boat.

If you have one of the little 25 or 28-foot cruisers, a 9-foot skiff with 4 feet of beam, weighing 80 pounds, and costing $30, will carry two people and some stores, or one man and a tremendous amount of supplies, very nicely; and she won't be too heavy for one man to handle in pulling her up onto the cabin roof when it has to be done in a hurry. For a 30 or a 35-foot cruiser, a 10-foot, round-bottom dinghy which weighs 125 pounds will be in proportion to the size of the boat. Such a tender will cost from $50 to $75; while for a 40-footer, a 12-foot, 150-pound boat worth in the neighborhood of $100 will be about the right thing.

Nine times out of ten these boats will be towed astern. That is why it is of so much importance that they should act right on the end of the painter. On a long cruise, where you are trying to make time, or if heavy weather is coming on, they should be lashed down on chocks on the cabin roof; and as on a boat as small as a cruiser of 40 feet over-all length davits are more or less of a nuisance, this must be done by main strength. This is where the lightness of the dinghy counts a good many points in her favor.

In towing, the greatest trouble is caused by sheering when the wind and sea are abeam or astern. This is usually caused by improper trimming, the boat being too much by the head. Sometimes a tender will tow under and fill when being towed at a good speed. This may be caused by trimming too much by the stern or by having too short a tow-line, so that the boat's nose is lifted

too high out of water. With the wind and sea abeam, it is best to make the painter fast on the weather quarter, and when towing for a long distance in a following sea it is a wise precaution to protect the towing line from chafing by serving with a piece of old canvas.

When you come to the dinghy for a 45 to 50-foot boat, you have something big enough to warrant your considering a power tender—something about 12 feet in length, with a 1½ to 2-horsepower engine. Such a tender would weigh about 325 pounds, and ought to make in the neighborhood of 5 miles an hour. A 5-gallon gasolene tank is large enough for her, as it will give considerably more cruising radius than a dinghy has any right to ask; in fact, a much smaller tank would serve, as far as the radius of action is concerned, but it would be too small to allow of getting enough pressure to feed the gasolene properly when the boat is going down the side of the good big wave.

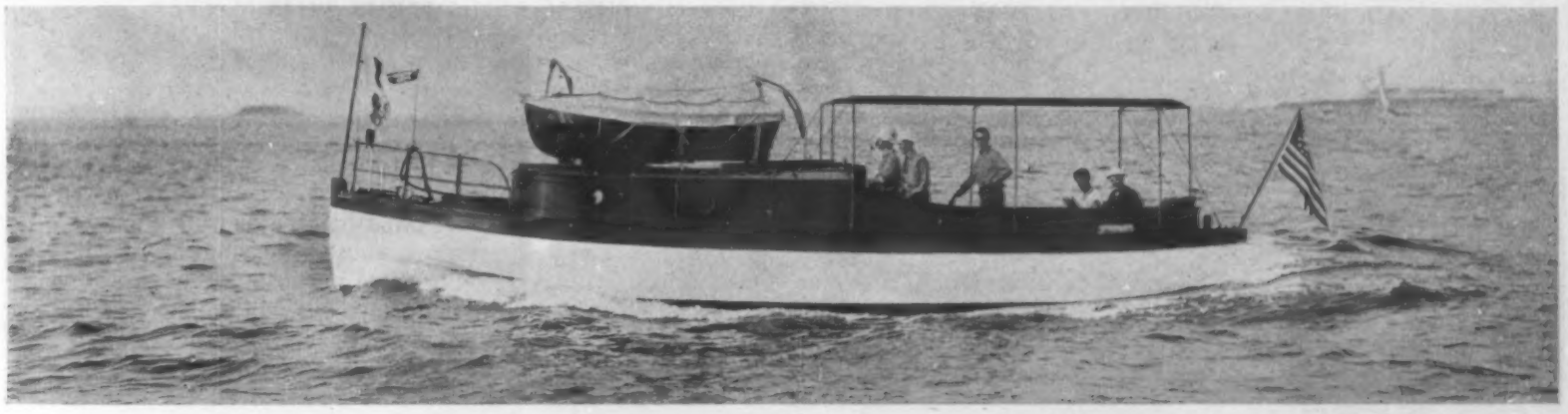
The 45 to 50-foot cruisers are large enough to allow the installation of davits for handling the power tender, but are not large enough to allow of the tenders hanging from the davits without a serious list; so when not in use the tender is swung aboard, and reposes peacefully in her chocks on the cabin roof with a watertight covering to keep out the water.

Any cabin roof heavy enough to support a man's weight will be strong enough for a tender weighing up to 500 pounds, as this weight is distributed over the full length of the boat; but if the owner has any doubts on the subject, and is a bit suspicious, he can put a couple of extra knees under his cabin carlines.

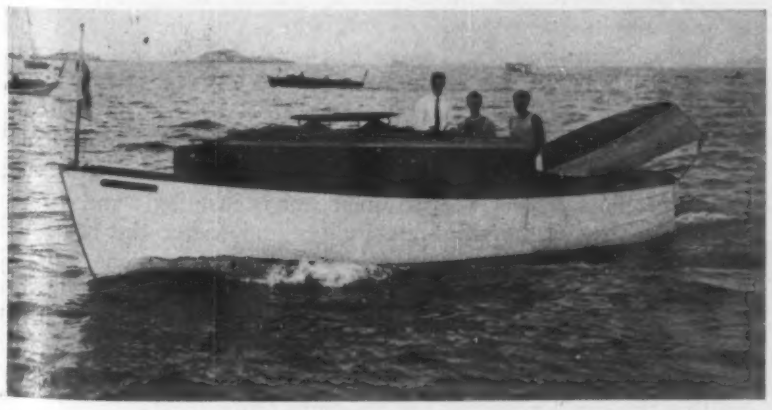
A 55 or a 60-foot boat is properly equipped with a tender of 14 feet in length, sporting a 3 horsepower engine. This boat will weigh between 450 and 500 pounds, and should make, under favorable conditions, 6 miles an hour. This is not as slow as it may seem, because if you will put the same load of passengers and supplies aboard an ordinary 14-foot launch with the same horsepower, she will make a great deal worse showing than the right kind of a dinghy.

TENDERS SWINGING OUT ON DAVITS ON BOATS LESS THAN 40 FEET IN LENGTH ARE UNSIGHTLY, AND IN THE WAY WHEN MAKING LANDINGS.

The davits for the 12-foot dinghy, of 1½-foot rod, will add 75 pounds to the weight of the cruiser, while ¾-inch davits, the proper size for swinging a 14-foot tender, will weigh about 100 pounds. Two double and two single 3-inch blocks—the latter with a becket—and 1½-inch rope (circumference measure) will allow of easy handling without too much exertion, and if there is 10 or 12 feet clearance between the bases of the davits the dinghy can be swung in between them quite handily and dropped on the chocks without trouble.



A 10-FOOT TENDER IS TOO LARGE TO CARRY ON DAVITS ON A 35-FOOT BOAT.



IN A ROUGH SEA OR ON A LONG RUN IT IS SAFER TO HAUL THE DINGHY INTO THE COCKPIT.

The boats described above are those adapted to the needs of cruisers ranging from the smallest to moderate and medium-sized boats. For the really big fellow, or for steam yachts, the amount of expenditure which an owner will cheerfully assume for fast and luxurious craft in which to carry himself and guests to and from his yacht is something that has not yet been fathomed.

Only this season there was built for the owner of Atlanta a twin-screw power tender, whose two 6-cylinder, 4-cycle Speedway engines put her through the water at a speed of 18 miles an hour.

The steam-powered tender, once considered the height of luxury, and which formed a prominent part of the boat equipment of the big steam yachts, has given way to the craft equipped with the internal-combustion motor and the naphtha engine; for, prophecies to the contrary notwithstanding, the latter type—the

DAVITS CANNOT BE USED TO ADVANTAGE ON A BOAT OF MUCH SMALLER SIZE THAN THIS.

A 12-FOOT POWER TENDER WITH A 1½ OR 2-HORSEPOWER MOTOR MAY BE USED FOR BOATS FROM 45 TO 50 FEET UP.

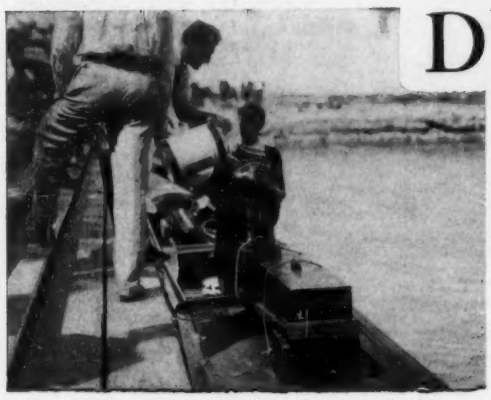
pioneer of the small, light-weight power craft—is still in great favor with many owners by reason of its great simplicity.

Of course, its consumption of fuel per horsepower is much greater than that of the internal-combustion motor; but this is such a small item in the upkeep of a steam yacht or sailing craft that it does not weigh very greatly with the owner.

What it Costs to Buy and Run a Motor Boat

AN ANALYTICAL AND COMPARATIVE STATEMENT OF THE VARIOUS ITEMS THAT ENTER INTO THE COST OF RUNNING AND UP-KEEP OF BOATS AND ENGINES

By HAROLD WHITING SLAUSON



DURING the past few years figures showing the relative efficiency of steam and electricity as a motive power for our railroads have been brought before the public in hundreds of magazine articles and engineers' reports; the comparative cost of maintenance of the horse and automobile has been discussed time and again; but with what are we to compare the cost and efficiency of the small motor boat? Steam is no competitor, except in a larger craft, for a gasolene motor can be placed in a boat which would be unable even to carry the weight of fuel required for a steam engine of the same power. The motor boat has created and occupies a field of its own, where it stands without a serious rival among the various forms of water transportation. It is doing on the water what the motor cycle and automobile are doing on land—revolutionising the old forms of transportation.

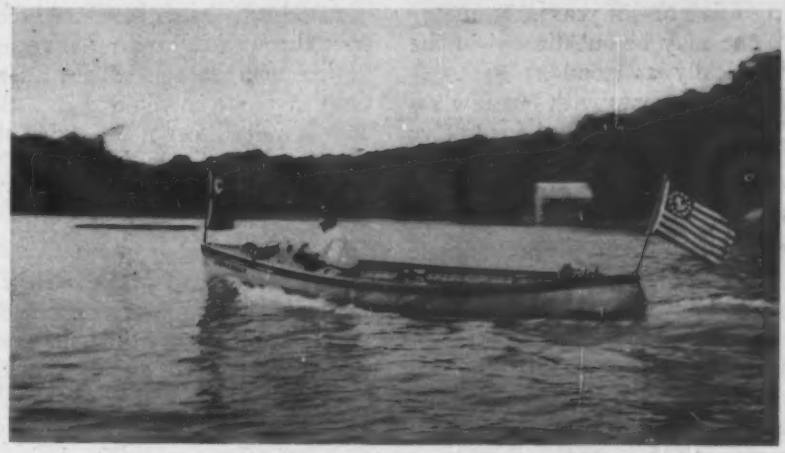
The initial cost of a small motor boat is much less than that of an automobile, as all those who have used them know. Suffice it to say that the prices will vary from one hundred dollars for the 16-foot motor skiff having a 1-horsepower engine to five or six thousand dollars for the 50-foot cabin cruising boats of from 25 to 50 horsepower, and even more for the elaborately finished and equipped gasolene yacht. This comparatively low original cost of the motor boat is the more apparent when one gazes at a handsome 50-foot cruiser with berths, galley, toilet, comfortable chairs—in fact, everything which would make for the luxurious accommodation of a party of six or seven on an extended cruise—and realizes that the initial outlay is no more than would be represented by the purchase of an average seven-passenger touring car. On the other hand, a man may purchase for a couple of hundred dollars a substantial single-cylinder motor boat which will answer the same purpose on the water that a seven or eight hundred-dollar runabout will on the land—realizing, of course, that the speed obtainable on the water is always much slower than that of transportation on the land.

When we consider the cost of up-keep, we come to another striking difference between the two forms of conveyance. In the case of an automobile, the cost of fuel is of secondary importance; but owing to the fact that boats move much more slowly for the same amount of power than will a car, the item of gasolene consumption becomes of foremost consideration in the cost of motor boat maintenance. This increase in the fuel consumption, however, is more than offset by the cost of tires for an automobile—a bugbear with which motor-boat owners fortunately do not need to concern themselves. An automobile will run from 12 to 30 miles on a gallon of gasolene, depending on its power and weight, while the smaller types of motor boats can travel but from 2 to 15 miles on the same amount of fuel.

It will be seen from the above figures that the item of fuel consumption assumes considerable importance in motor boating. The variation in this mileage depends entirely on the nature and size of the hull in which a certain motor is installed; and it may be taken as an axiom that the lighter and faster the boat, the greater will be its radius of travel per gallon of gasolene. From the point of fuel consumption, the cheapest boats to maintain are those light skiffs in which one or two-horsepower motors have been installed; for, as the speed of the boat does not increase proportionately with the increase in power of the engines, it is obvious that the smaller motors are the more economical.

Another factor that conduces toward high fuel consumption is the almost universal use of the two-cycle engine in boats of the

smaller sizes. Motors of this type are noted gasolene eaters, but this loss of efficiency as compared with the four-cycle is more than counterbalanced by the added simplicity of motors of the valveless design. A case in point which has come under the writer's observation is the performance for four successive seasons of a three-cylinder, two-cycle, 12-horsepower motor which was installed in a 27-foot hull capable of accommodating fifteen passengers. This motor served to drive the boat at a speed of 10 miles per hour; and while its gasolene consumption of a gallon for every 3 miles may seem excessive, the cost of repairs did not amount to ten cents a year. The least that would have been required in a four-cycle motor would have been the grinding of the valves several times a year; and while the gasolene consumption would have been considerably less, it is a question whether the greater simplicity of the two-cycle type is not of more importance to the man who operates his own boat than a saving in the fuel bill.



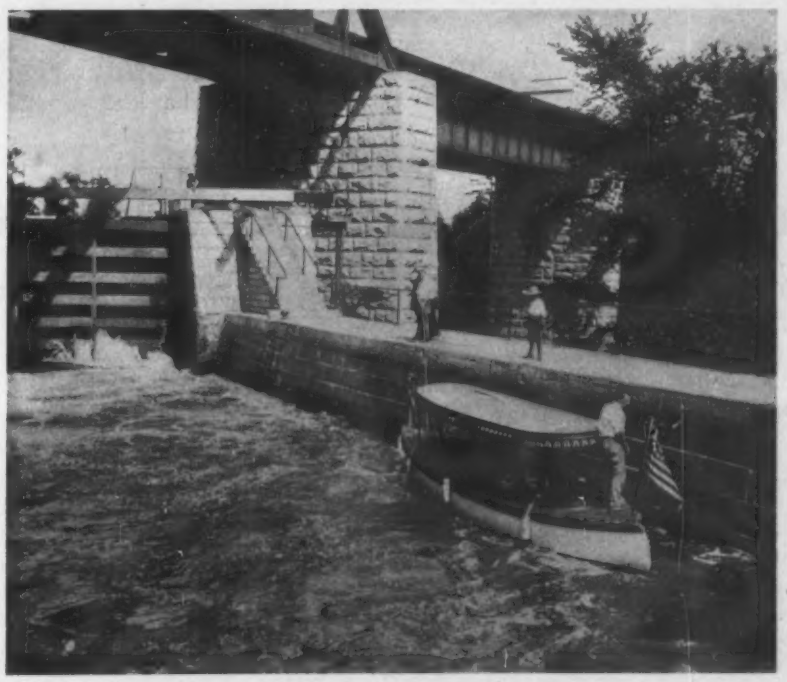
THE SMALL SINGLE-CYLINDER RUNABOUT IS THE MOST ECONOMICAL FOR FROM ONE TO THREE PERSONS, AND MAY BE RUN AT A COST FOR FUEL OF ABOUT 1 CENT A MILE.

At $.15 a gallon for gasolene, the cost of fuel for the boat in question is brought to five cents a mile. This cost will be practically the same whether there is but one person in the boat or whether the craft is loaded to its full capacity of fifteen people. It is obvious, then, that for from one to three persons this is an expensive craft to operate, and it will be found that, unless large parties are taken out frequently, it will be advisable to purchase a small boat to use for short runs and light loads. It has been figured that a $200 runabout in four or five seasons will pay for itself in the saving of fuel alone. One of these small boats can carry three persons easily, and will run on an average of 15 miles on a gallon of fuel, or at a cost of about one cent per mile. In other words, it can be operated for the same distance on one-fifth the amount of gasolene required for the larger boat.

Next to the cost of fuel on the list of regular running expenses comes the yearly outlay required for batteries for ignition purposes. Assuming that all of the electrical adjustments are made properly, the length of life of the batteries depends entirely on the speed at which the motor is run, the number of cylinders in the engine, and the opportunity given the sets for recuperation. It is advisable to use a dozen batteries at a time—two sets of six each. These sets should be switched on alternately, so that one will be given a chance to rest and recuperate while the other is supplying current to the ignition system. Used in this manner, a dozen batteries for the three-cylinder motor referred to above can be counted upon to last about one hundred hours of actual running, or fifty hours per set. If the boat averaged about three hours' actual running a day, two sets of six batteries each could be used for a little over a month, thus bringing the cost for this part of the ignition system (at $.25 per battery) to about $3.00 per month, or about one-third of a cent per mile. For the small, single-cylinder motor, the current consumption would not be so great, and from 50 to 75 per cent. can be added to the length of life in the batteries in this case.

Lubricating oil and cup grease do not assume very startling proportions among the expense items. A gallon of oil should last for a month on a medium-powered, multi-cylinder engine, while the single-cylinder motor should be able to get along on half that quantity. There can be no arbitrary standard of oil consumption fixed, however, as this is something which will vary with the speed of the motor—the higher the number of revolutions of the engine, the greater will be the amount of lubricant required. In the case of the two motors whose performance we have been following throughout this article, the larger craft consumed four gallons of lubricating oil in five months of running, while its smaller companion used just half that amount. At $.60 a gallon for oil and ten cents a month for cup grease, the monthly cost of lubricants is brought to $.58 for the three-cylinder motor and $.34 for the single-cylinder engine.

Items.	3-Cyl., 12 Horsepower		1-Cyl., 3 Horsepower	
	Per Month.	Per Mile.	Per Month.	Per Mile.
Gasolene	$45.00	$0.05	$9.00	$0.01
Batteries	3.00	0.00333	2.00	0.00222
Oil	0.48	0.00053	0.24	0.000266
Cup grease.....	0.10	0.00011	0.10	0.000111
Totals	$48.58	$0.05397	$11.34	$0.012597



A 27-FOOT BOAT WITH A THREE-CYLINDER, 12-HORSEPOWER MOTOR, CAPABLE OF ACCOMMODATING FIFTEEN PASSENGERS. THE COST OF FUEL HERE IS ABOUT 5 CENTS PER MILE.

The gasolene, batteries and lubricating materials constitute the only fixed items which can be charged to running expenses, and if the operator is careful and lucky they may also constitute the only charges for the entire season. A resumé of these expenses for the two boats in question may prove profitable to present or prospective motor-boat owners, and is given in the table above as the cost per month and the cost per mile. In figuring the distance traversed during the month, an average of three hours per day, at the rate of 10 miles per hour, is taken as the basis.

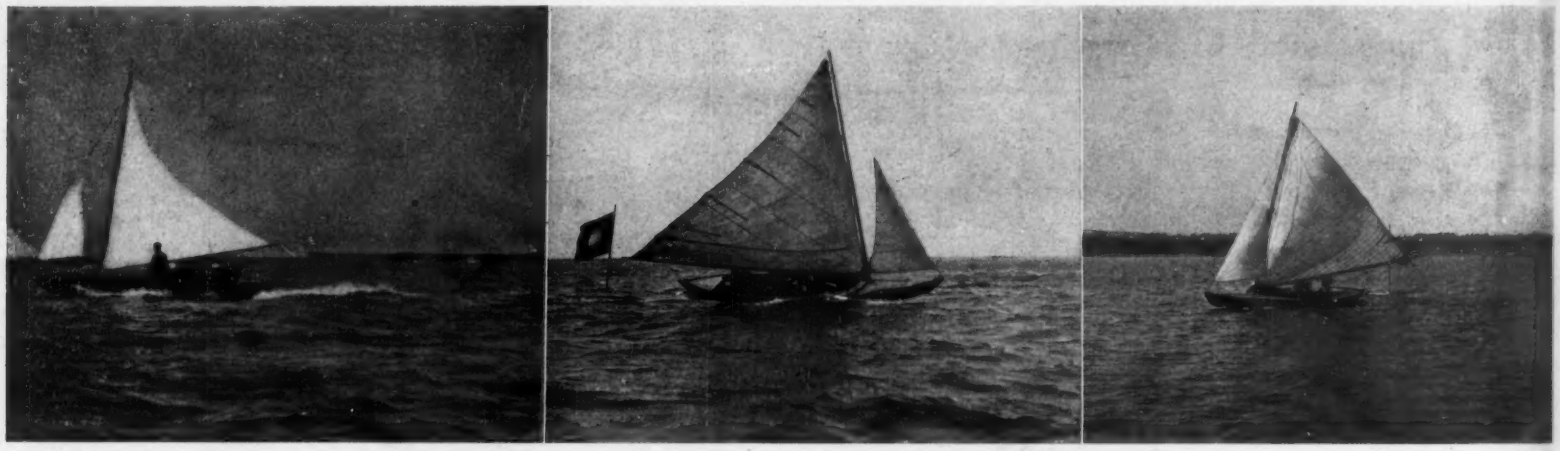
A motor boat will not depreciate nearly as much in a season as

will an automobile. If, at the end of five or six years, the motor is found to be badly worn, a new one may be substituted in the same hull and the boat made practically as good as new. A marine engine should last from five to ten years with but few repairs, while the hull, if well built, should remain sound for twelve or fifteen years. It will be plainly evident that the wear and tear on a motor resulting from the jar will be much less on water than on land, and, in addition to this, marine motors, as a rule, are made much heavier and more substantial than the automobile engine.

Of course, the length of life of a marine motor and hull will depend to a large extent on the amount of care which is bestowed upon them during the season. The entire hull should be repainted both above and below the waterline, the decks varnished, and the motor thoroughly overhauled. A few dollars spent in this manner at the beginning of each season will increase the length of life of a motor boat from 100 to 200 per cent. and will keep the craft in the top notch of condition at all times. Even though the boat is of good size and the expense of hauling out and painting is considerable, it probably would not represent an expenditure equal to the cost of preparing a first-class automobile for the season's touring.

Another item to be considered is the cost of storing the motor boat through the winter months. While this will not reach the figures of a garage bill for an automobile for an equal length of time, it must be remembered that the storage charges represent almost a dead loss while the boat is out of commission. It is consequently advisable, if possible, for the owner to erect a boat-house where the craft may be stored throughout the year and where repairs may be made at the beginning of the season. If this arrangement is impracticable, however, a charge of at least a dollar per foot of length of the boat for storage will have to be reckoned in the yearly expense of motor-boat operation. It is well, also, to insure the boat against fire for at least two-thirds of its value, and, while the premiums charged are not excessive, this item should also be included in the cost of maintenance for a year.

These estimates of the cost of operating a motor boat for a year have been taken from the viewpoint of the average man of moderate means who would prefer an all-around pleasure craft to one of the more expensive and delicate racing boats. This latter type occupies a distinct field of its own, and the difference in the cost of up-keep between a 40-foot racing craft and a cruiser of the same length would be so great that the figures here given would not apply.



LYING OUT TO WINDWARD IN A FRESH BREEZE. LITTLE MISCHIEF II, THE RUNNER-UP IN THE SERIES. MERRILY, WINNER OF THE CHAMPIONSHIP SERIES.

Winter Racing on the Pacific Coast

THE SOUTH COAST Y. C. DORY CHAMPIONSHIP FURNISHED THE BEST OF RACING DURING THE WINTER—THOUGH THE SEASON IS LONG, THE PROSPECTS ARE PARTICULARLY BRIGHT FOR THE SUMMER MONTHS

By WARREN D. WOOD

INTEREST in yachting in California is rapidly increasing, though as one travels from north to south the conditions change very perceptibly. For one thing, the weather pertaining to northern California is very different from that on the south coast. In San Francisco Bay a steady breeze usually blows, varying in velocity from 25 to 35 miles an hour, while the yachtsman of San Pedro and San Diego can generally depend upon a good sailing breeze rarely exceeding 12 miles an hour. Another feature in favor of the southern sailor is the long, regular swell, whereas the San Francisco clubmen have a short and extremely steep chop to buck. So it may be seen that yachts suited to one locality might fail utterly under the varied conditions of another.

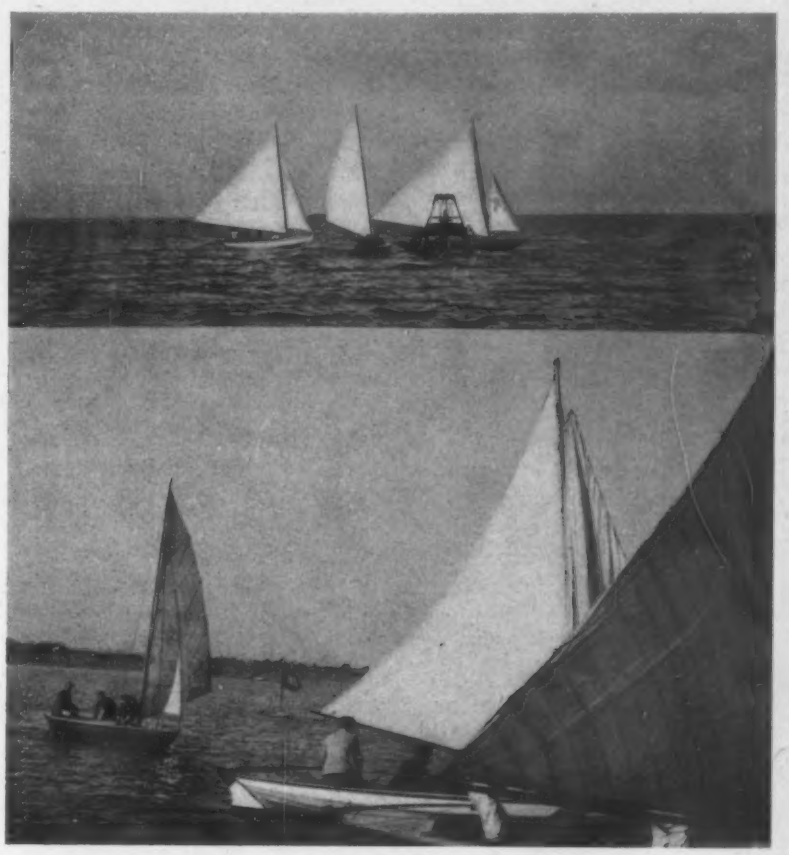
In Southern California winter yachting bids fair to become as popular as during the summer months. Interest has been kept at fever heat this winter by the South Coast Yacht Club Dory Championship series, which was started on December 6, and consisted of a series of sixteen races sailed on alternate Sundays, finishing March 14. It is worthy of note that, in a very rainy winter, ideal weather and favorable winds have prevailed for every race, not a drop of rain marring the beautiful, sunny, summer-like afternoons.

The present fleet of dories is the first of its kind to be built on this coast, and the success that has crowned the efforts of these pioneers has made other yachtsmen take particular notice, so that the future of dory racing on this coast is now assured. Already the South Coast Yacht Club has included them in its schedule of races, and other clubs are considering the building of these boats, which are of the well-known Swampscott type, 21 feet over all, 5 feet 8 inches beam, and decked in. They carry 250 feet in the working sails, while the spinnakers, which are also used as balloon jibs, makes a total sail area of 350 feet—rather a formidable sail spread for a boat of these dimensions, even though a crew of three is carried on each boat. Eight of these little boats were owned in the club.

The courses for this series were five miles in length and laid out in the outer harbor of San Pedro, which is an ideal spot for small-boat racing, as it is sheltered from the long swell and rough water of the open ocean, yet a good, full-sail breeze may nearly always be counted upon.

It took a race or two to get the boats tuned up and to find out what they were capable of, but from the third event the racing was keen and exciting. In this race all the boats used their spinnakers, which had not been finished in time for the other races. The start was down the wind, and all were well bunched. The skipper of Red Fox, in setting his spinnaker, let the halyards get away from him, and, in the excitement of the moment, he started aloft after them. He only reached a distance of six feet above the deck when he described a graceful curve, which landed him, as well as his crew, in the rather chilly water. Little Mischief II annexed first place after a hard fight with La Concha, who made her first appearance in this race.

There was still more excitement when the fourth race started, as the breeze had freshened considerably. The start was another leeward one, and setting the spinnakers in the stronger wind was a rather ticklish job, but was accomplished by all except Red Fox, which had been righted and bailed out. When the leeward mark was reached the boats were all in a bunch, Little Mischief II leading, with Merrily second; but at the turn the latter was forced to give way to La Concha, and in doing so her spinnaker, which was being taken in, backfilled, and her crew were unceremoniously informed as to the temperature of the water. Her crew, however, righted her, and, bailing like demons, finished the race, being awarded fifth place. Little Mischief II again won, which placed her in the lead with a percentage of 75.



KEEN SCRAPPING ALWAYS MARKS THE DORY RACING OF THE SOUTH COAST YACHT CLUB.

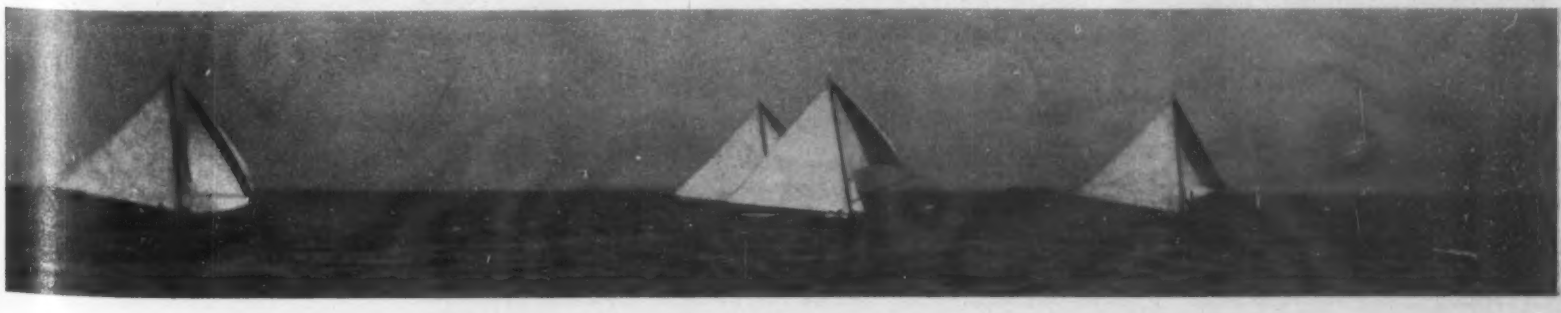
In the fifth and sixth races Red Fox, sailed by Joe Fellows, won both events, which put her in the lead, with a percentage of 80.5, as she had taken the first races of the series. Little Mischief II came into her own, however, in the seventh and eighth races by winning both of them, although Merrily pushed her hard in the seventh, and was unfortunately disqualified for fouling Kitty. The result of these two races again put Little Mischief II in the lead on points. Before these last races were sailed Red Fox had been sold, and missed the able handling she had received from her former skipper, Joe Fellows. Her name was now changed to Chillie Pepper.

The ninth and tenth races also went to Little Mischief II, giving her a percentage of 80, while Merrily and La Concha divided second and third places between them. It began to look now like Little Mischief II's series. But in dory racing the unexpected is liable to happen, and in the next four races, which were fought out between Merrily, Little Mischief and La Concha, the former won all four events, while Little Mischief took two seconds and La Concha one. The series was now drawing to a close, and the percentage table gave Little Mischief II 73.8 and Merrily 73.7 per cent.

Excitement ran high when the gun cracked for the fifteenth race. Walter Folsom, in Little Mischief II, required only one of the two races remaining, while Warren Wood, in Merrily, had to take both in order to win. The wind blew a good, whole-sail breeze, and the course was over a 5-mile triangle, the first leg of which was a broad reach, one mile in length. The gun at 1 P. M. found Little Mischief on time and ready to shoot across the line, being followed by Blue Fin, Merrily, La Concha, Kitty and Doris. Chillie Pepper had an accident just before the preparatory gun, in which she carried away her boom, making it impossible for her to enter the race. The first flag was rounded by Little Mischief II at 1:08:22, followed by Merrily at 1:08:25. After jibing around the mark, the boats squared away before an increasing breeze for the leeward mark 1½ miles away. Merrily took Little Mischief's wind and rounded 22 seconds ahead of her. In the 2½-mile thrash to windward Merrily did considerably better than Little Mischief II, by pointing higher and footing faster, and it was soon evident that it was her race. She finished at 1:42.40, with Little Mischief II 3 minutes and 5 seconds behind. La Concha was knocked down within 10 yards of the line and capsized!

The wind had been freshening all afternoon, so that by the start of the second race it was about all the dories could stand,

(Continued on page 436.)



DOWN THE WIND WITH SPINNAKERS SET IN THE OUTER HARBOR AT SAN PEDRO.

Some Famous Cups and Their Histories

By LAWRENCE PERRY

Photographs by James Burton. Copyright, 1904

COMMODORE'S CUP FOR SCHOONERS.
THE COVETED AMERICA'S CUP.

NATURALLY there are few yachtsmen, owners of swift sailing yachts, for whom the mere sportsmanlike satisfaction of winning a race is all-sufficient. Victory is not entirely satisfactory when unaccompanied by costly fruits in the shape of cups or other substantial trophies. And very naturally, since we are as we are.

When you entertain your friend it is a very simple matter to point to a tall cup gracing a ledge in your drawing-room, or smoking-room or den, and carelessly observe that it is very precious to you because your yacht won it in one of the most exciting races ever sailed. Or, in event of the prize being a perpetual challenge cup, it is not slight cause of satisfaction to have your name and the name of your boat inscribed thereon—undying testimony that one time in the near or far distant past you owned a swift windjammer.

Still, we have advanced! There used to be a time when American yachtsmen were hardly satisfied unless a goodly purse accrued to the winning yacht owner. Match races for purses of from five hundred to ten thousand dollars were the rule rather than the exception in the old days of the New York Yacht Club, and the famous race across the ocean of the Vesta, Fleetwing and Henrietta for $30,000 a side, $90,000 in all, still lives in yachting tradition.

Nowadays whatever may be said of our desire to win—and what nation of yachtsmen has it not?—we race no more for financial gain; and, to our honor be it said, cups are won day after day throughout the yachting season which money could not buy.

In this way the famous America's Cup, the most famous yachting trophy in the world, stands as an illustrious example. When offered for contest in the early fifties its cost, not its intrinsic value, gave it its name "One Hundred-Guinea Cup." From every standard of the silversmith's art it may not be termed a beautiful cup, although in 1851, when an American brought it to our shores, it was considered the handsomest trophy ever designed.

It was made in 1849 by R. and S. Garrard, of England, from designs by an artist whose last name alone lingers in the memory of old-time American yachtsmen—Spencer. Without its pedestal it stands 27 inches high and weighs 35 ounces. The design, obviously, was borrowed from the German bulbous hauaps of the seventeenth century; and, while it might have been borrowed from a more artistic source, who thinks of art or of intrinsic value in connection with this prize for which so many English yachtsmen have contested, and in the defense of which considerably more than a million dollars have been expended?

This is a fine thing when you think about it. The owner of the America, Commodore Stevens, presented the trophy to the New York Yacht Club shortly after its arrival in this country, subject to conditions which constituted the first deed of gift. In 1881 the club returned the cup to George L. Schuyler, the only surviving owner, and it was re-accepted by the club under a new deed of gift. Six years later the trophy was again returned to Mr. Schuyler and was again turned over to the club under a third deed of gift, which still stands by virtue of frequent propping by New York Yacht Club artisans.

It would seem that, in these modern days, whenever a man of wealth desires to enhance his nautical reputation he offers a cup. This is very well to a certain extent; but it would

ONE OF THE ASTOR CUPS. COURSE, BRENTON REEF TO VINEYARD LIGHTSHIP AND RETURN.
KING'S CUP, PRESENTED BY KING EDWARD.

seem that the contention of old school yachtsmen that there are already a sufficient number of cups, international and otherwise, in this country and England to satisfy the most insatiate mug-hunter, is well taken. There can be too many cups; such plethora is worse than a dearth.

For example, a season or two ago they were talking of a new international trophy to take the place of the hedged-in America's Cup. In view of the two famous international cups which through many years have been waiting to be raced for, the Brenton's Reef and the Cape May Cups, this would seem unnecessary. Surely all the elements of tradition invest these prizes, and the yachtsman winning them would find himself possessed of a rich reliquary in the way of marine prestige to hand down to succeeding generations. But no; no one seems to care to race for them, and new cups designed for lasting fame—but which have not the slightest chance of it—spring up from year to year, have their brief hour of publicity and disappear from view.

THE OLD SCHOONER MAGIC, WINNER OF THE COMMODORE'S CUP IN 1874.

The Brenton's Reef Cup was presented to the New York Yacht Club by James Gordon Bennett, ex-Commodore, in March, 1871. It is a magnificent piece, and at the time represented the very highest art of which Tiffany & Co. were capable. The cup was offered for competition by the yachts of all nations, to be sailed for in an ocean race on a course from the Brenton's Reef Lightship, off Newport, to and around the Sandy Hook Lightship, and outside of Long Island and return.

The cup may be held for thirty days by the winning yacht without liability to challenge. Upon the expiration of that period the winner of the cup must accept any challenge and be prepared to sail a race over the same course within the space of fifteen days following receipt of the challenge. Should any yacht succeed in holding the cup in two successive races in one season the owner is not liable to a challenge until the next yachting season.

In the event of the cup being held at the close of a season by a foreign yacht the owner shall be liable to a challenge during the season of the year ensuing over a course from the Needles, Isle of Wight, to and around a stakeboat off the harbor of Cherbourg and return. For races sailed for this cup there is no time allowance. Any yacht challenging the holder of the cup must deposit $500 with the regatta committee of the club represented by the holding boat, which, if the challenger fails to win, must be forfeited, to be invested in a cup to become the property of the challenged party.

Seven races have been sailed for this prize. The first was on July 25, 1872, when J. M. Forbes' schooner Rambler and Jacob Voorhis' schooner Madeline started from Sandy Hook for Brenton's Reef and return. Rambler won, finishing on July 27. Madeline did not finish.

CUTTER GENESTA, WHICH TOOK THE BRENTON'S REEF AND CAPE MAY CUPS TO ENGLAND IN 1885.

The next race was on September 19, 1873, Madeline and Rambler again contesting, the start this time being made from the Brenton's Reef Lightship. Rambler won again. On July 26, 1876, a number of goodly boats started from Sandy Hook for the prize. There were S. J. Colgate's schooner Idler; the famous America, B. F. Butler; Wanderer, James Stillman; Tidal Wave, W. Voorhis, and the Canadian cup challenger, Countess of Dufferin. Idler won.

Copyright by Burton, 1904.

CAPE MAY CHALLENGE CUP.

On September 21, 1885, the British cup challenger Genesta and Caldwell H. Colt's schooner Dauntless raced for the cup, which the English cutter won handily, taking the trophy to England. In England, on August 15, 1886, J. Jameson's cutter Irex and Genesta raced for the trophy, which Irex won. Both were British boats. On September 14, 1893, Royal Phelps Carroll, who had taken his cutter Navahoe to the other side, met the Prince of Wales' cutter Britannia. Navahoe finished a few seconds astern of Britannia, but the race was awarded to her on a technicality, her elapsed time being 2 seconds faster. Since the cup was returned to this country there has been but one race for it,

(Continued on page 434.)

HELMHOLTZIAN FOG BILLOWS.

FOG BILLOWS OF THE UPPER SURFACE.

Fogs: What They Are and Where They Come From

By C. H. CLAUDY

Photographs by Prof. A. G. McAdie

THERE is nothing with which the mariner has to contend that has more possibilities for harm than the elusive, intangible, deadly fog. The storm's fury one knows, and can, in a measure, guard against; the rocky coast is well charted, and rocks and bars are guarded by lighthouse and bell. But the fog? Its deadliest purpose is concealed by itself; its worst feature is that which prevents the danger it hides becoming known.

In a fog the ship must blindly grope her way against the odds that beset her, being able only to signal her whereabouts by uncertain sounds, seeing nothing, and putting her trust in a sense of hearing that proves often unreliable. On the darkest night the red and green eyes of a boat are always visible. In the heaviest storm of rain some gleam of light may pierce the darkness. But in a dense fog nothing save sound and hearing stand between the keel and the bottom.

What is fog? Where does it come from? Why does it come?

Fog and cloud are alike in composition, both being formed by moisture in the air made visible by precipitation in a very finely-divided form. To understand the formation of either fog or cloud it is necessary to know that air will contain a certain amount of moisture at a certain temperature, and that the maximum amount varies with the temperature. Thus, air at 50 degrees Fahrenheit may contain a certain amount of moisture—let us say X gallons—while the same air, at a temperature of 70 degrees, may contain two X gallons in a given volume. This amount of moisture is called the humidity of the air, and is expressed as both the relative humidity and the absolute humidity.

Relative humidity is expressed in percentage of the total possible amount. Thus, if the temperature is 50 degrees and the humidity is 65 per cent., it means that the air, at the temperature of 50 degrees, contains 65 per cent. of the total amount of moisture which air at that temperature could contain.

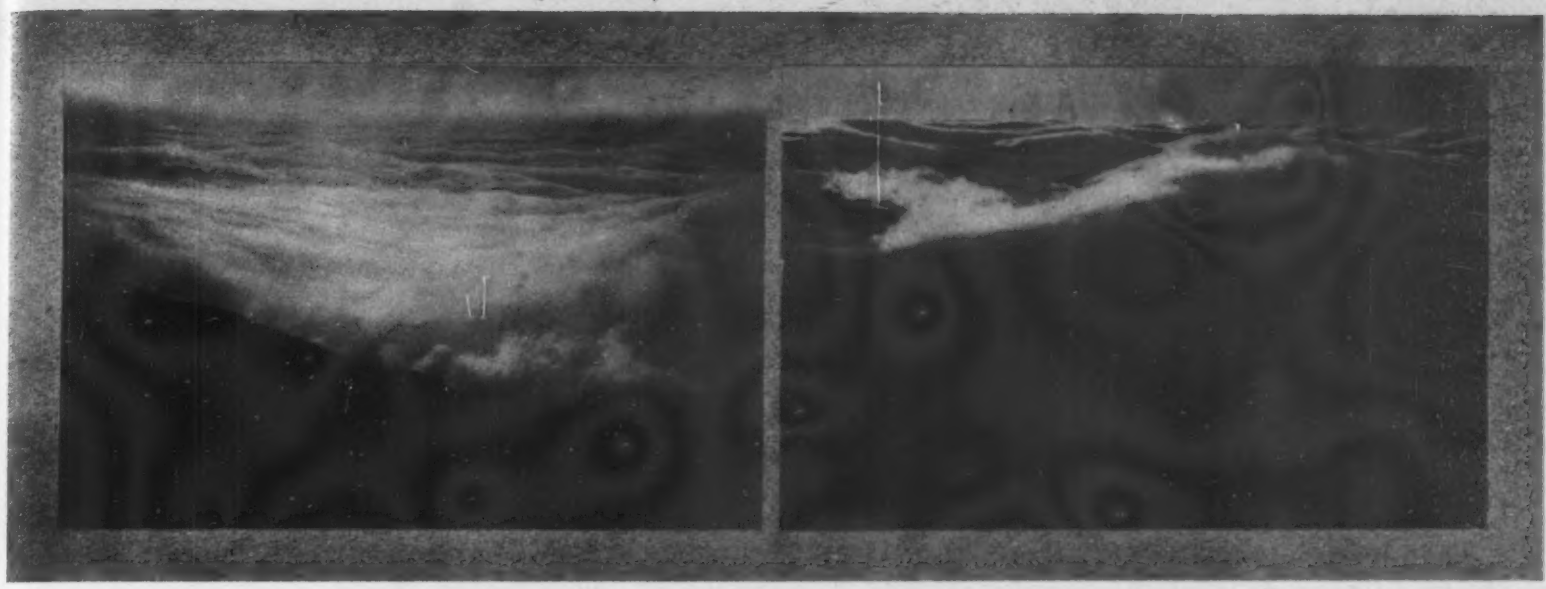
Absolute humidity is the actual amount of water present in the air, and is usually expressed in grains per cubic foot for certain temperatures. The warmer the air, the greater the absolute humidity. Thus, air at 60 degrees, with a relative humidity of 100 per cent., contains 5.8 grains of water per cubic foot, while air at 80 degrees, with a relative humidity of 100 per cent., has 11 grains of water per cubic foot. The warmer the air, then, the more moisture it contains in a given per cent. of relative humidity.

Now, when air at a high temperature—say 80 degrees—contains a large percentage of relative humidity, it will increase that percentage as the air cools. When the relative humidity reaches 100 the so-called "dew point" is reached, when the air can hold no more moisture, and when, if any more be added to it, precipitation occurs. This precipitation appears a much simpler thing than it really is, as is evidenced by its being not altogether understood. Thus, it is known that most clouds have more dust particles in them than the surrounding air, accounted for by postulating that dust-laden air is carried from the earth by an upward current, and that precipitation of saturated air occurs more readily on solids (dust particles) than without them.

When air, containing moisture, cools to the dew point, cloud or fog is formed at once, and what we know as precipitation of moisture takes place. This does not necessarily mean that it rains or snows on the earth, for the amalgamating and dropping water particles may be, and often are, so small that they fall but a short distance before they are evaporated again.

As a general rule, condensation of moisture in the air takes place up in the air and in the form of cloud and rain, because the most common cause of cooling air is by what is known as the adiabatic process, by which air, rising, expands and cools in the process, just as air, falling, is compressed and heats in the process. But now and then conditions arise when the process of cloud formation occurs next to the earth, when we have fog. For instance, on a clear night the outward radiation of heat from the ground may cool the ground rapidly. The lowest stratum of air is next cooled, and passes the dew point. If the amount of moisture present is slight, a heavy dew only may result; but if a large quantity is present, fog forms. This layer of fog in turn radiates heat into the layers of air above it, which, in their turn, are cooled by the cool layers below and form layers of fog. Layer after layer is formed in this way and the fog becomes thicker and thicker. When the sun comes up the processes are reversed, the sun's rays heating the air above the dew point and thus absorbing the fog, through each successive layer, until the earth is reached.

When a body of moist, warm air is carried by wind movement into a cooler locality, moisture is condensed and fog forms. This fog is oftenest seen over water, and particularly south and east



LOOKING DOWN ON A SEA OF FOG FROM THE TOP OF MT. TAMALPAIS, NEAR SAN FRANCISCO.

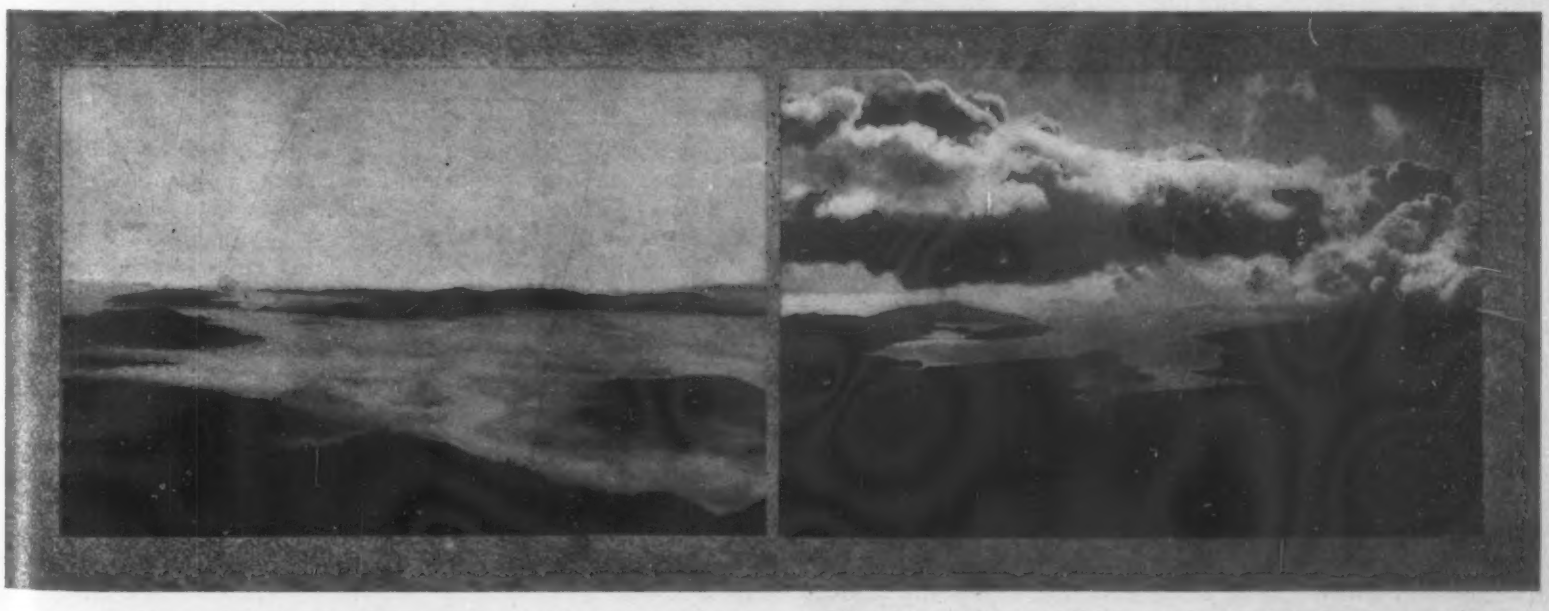
FOG SURGES. THE WAVE MOTIONS OF THE UPPER SURFACE OF A FOG ARE SIMILAR TO THOSE OF THE SEA, THOUGH MUCH SLOWER.

of New Foundland. Warm, moist air from the Gulf Stream hits the air of the Arctic current or is chilled by the ice floes of the north, brought down by ocean currents. These fogs are extremely dense, the sun's rays being either kept from them by cloudiness or the penetrative quality of the sun's heat not being sufficient to disperse during the day the fog that is built up during the night. The average number of days of fog in the neighborhood of the 55th Meridian (west of Greenwich) is as follows: For January, 5; February, 11; March, 12; April, 15; May, 18; June, 17; July, 23; August, 22; September, 15; October, 13; November, 10; December, 4. Thus it will be seen that the summer produces the greatest number of foggy days. This is due to the larger amount of moisture present in sea air in the summer and the greater contrast in temperature between it and the ice fields off New Foundland.

Fogs have furnished much opportunity for meteorological study. They behave in somewhat curious fashion at times, as may be noticed from the remarkable fog photographs which illustrate this story. The upper surface of a fog is very similar to that of the sea in its behavior, except, of course, that the wave motions are relatively much slower, owing to the attenuated medium in which they exist. Fog not infrequently rises as a body and becomes cloud, if an ascending current of air is formed before the rays of the sun have a chance to dissipate the fog. Such a phenomenon is illustrated in one of the pictures with this article.

There is hardly a mariner who has not had fog experiences. Every man who steps a deck can add his mite to the knowledge of fog by noting, before, after and during a fog, all the phenomena which have a bearing upon it—time, temperature, barometric pressure, wind and moisture, if he possesses a hygrometer of any kind, the appearances both previous and subsequent to the fog, and, if any indications are present, the extent and height of the layer.

Some day we are going to be able to predict fog, to state its time and place of occurrence; and some day, too, we are going to be able to dissipate it at will. No! the writer is neither crazy nor too optimistic. But he knows what has been done and what is being done along the lines of both weather prediction and weather control. The goal is not in sight, even distantly. But modern methods of meteorology are gradually bringing us from that mental fog regarding the weather we have lived in for so many, many years; and just as surely as science has conquered transportation with the railroad, conquered distance with the telegraph, and won from the air the secret of the birds, so will she, in time, take from Nature her most unreadable riddle. Then we shall know what makes the weather do as it does, why the winds blow when they do, and how to predict with accuracy not only the coming storm and the coming flood, but the coming fog, the amount, area and degree of it.



SAN FRANCISCO BAY, WITH MOUNTAIN TOPS FORMING ISLANDS IN A SEA OF FOG.

FOG OVER SAN FRANCISCO BAY AFTER IT HAS RISEN AND FORMED CLOUDS.

With Fife at the Helm

ENGLAND'S FOREMOST YACHT DESIGNER IS ALSO A MASTER HAND AT THE STICK—A PERSONALITY THAT ALWAYS GETS THE MOST OUT OF A CREW

By C. H. J. SNIDER

THERE are skippers and skippers. There are the quiet ones, who drive you crazy by never getting mad enough; the noisy kind, that waste enough wind to split a storm trysail of oo duck; the swearing sort, that make you solemnly promise yourself that you will kill them just as soon as the race is over—but to win it first. But the most interesting sort it has been my luck to pull and haul for is Wm. Fife, Jr., of Fairlie, Scotland.

They still tag Fife "Jr.," although he has been the head of the great Scotch designing and building house for years. There has always been a Fife, Jr., apparently, since the beginning of time, the Fife yards on the Clyde being regarded as a sort of national institution, like the Solway or the Highlands.

It was a surprise to find the great naval architect also a crack stick handler. Other people may have known it, but I had never thought of Fife as a racing skipper. Of course, I assumed he knew how to sail a boat—that is, or ought to be, a big part of every designer's business. But that Fife should get in the game himself rather than watch and counsel others had never occurred to me. As a matter of fact, he has had experience at handling everything that races, from America's Cup cutters down to half-raters and up again. Full of tricks as his speech is full of r's, you would think, once you had sailed with him, that the famous creator of the Shamrocks had never done anything but sail racers all his life. The cool, calculating designer was left somewhere else as soon as he stepped into the steering cockpit. Instead, was a brisk Scotch sailing man, salty as a herring and pungent as cayenne.

FIFE'S BURLY FORM FILLS THE STEERING COCKPIT.

"Come aft, ma hear-r-ties!" he burred out. "Stow yourselves smartly, now, under the decks—well aft, now, well aft, and keep the little boat's nose from boring!"

He took a twist up and down and satisfied himself that the boat—he had never been aboard of her before—sailed better with her head well out.

"That's fine, fine!" he chuckled. "Now every man in his pew and work ship." Work ship! We thought ourselves a decently smart crew and the boat lively. But he put her and us through paces that would make you dizzy. It was wear and stay, stay and wear, light up, overhaul and trim down—gatling-gun style—until he knew what we could do and we knew just how he wanted things done. He had a new call for wearing ship which caught immediately. We had always heard "Stand by for a jibe!" or "Jibe her over!" or "Wear ship!" Fife's pet call was "Jibe-O!" He put more heart into it than I have ever heard in any other sea-call, and after half-a-dozen tries at it our Norwegians forward would sing out "Yibow!" as lustily as though it were native Scandinavian. There is a whole lot in the way a skipper talks. The man who hits the right line gets the work done. The words themselves are not all-important. The tone has much to do with it—and Fife's you can't reproduce.

"Trim your mainsheet!" he would sing out. "Aft all! Down with her! Now, don't go shooting out of your ship like that!"—as a zealous one sprang for the outer traveler to get a better heave—"Stay in your pews! One, two, three, All! One-two-three - All! Onetwothree - All!" Type can't show how fast the great Scotchman could say it, nor how that mainsheet came home as we swung in perfect team pulling.

And no sooner would the mainsheet be aboard than it would be: "About ship! Har-r-d-a-lee!" We would light up and trim down again like clockwork; but the turns on the headsail cleats would not be out of our hands before it would be: "A-r-round she goes!" and "A-r-r-round she goes again!" and "A-r-r-r-round she goes again!" And every time he would say it she did go around, a second faster for every "r" he used.

Short hitches, or false tacks, are a favorite little pastime of Mr. Fife. The jib sheets used to get so hot over it they would blister your fingers; you would wonder—if you had time—how the boat got way enough on her between stays to answer her helm. But he is a past master at the art of short tacks, and, in the little experience I had with him, always got away from his opponent, even with the latter in a faster boat. The mainsheet was always sprung "just a wee" for this occasion, the headsails never flattened too hard.

"The boat with the most way on her," the great man confided once after such a whirl, "comes out ahead at the last in close grips like these."

Fife's reticence, his modesty, his Scotch canniness, are the sides that present themselves inevitably to the casual acquaintance. The foremost British designer of the age is one of the most retiring of men—when he has a chance to think about it. The newspaper chaps found that out long ago. Mr. Fife was courteous, Mr. Fife was even affable; but Mr. Fife had little to say about his business, and nothing about himself. But in a race it's different. He warms up. What is more, he carries that warmth to others. Some skippers lose races because they petrify good crews by enforcing a stony silence, by sepulchral whispers about "settling down," "keeping quiet," and "not jarring the boat." Fife doesn't. Packed in the weather bilge, not a soul save the skipper showing above decks to economize windage, it does you good to hear the cautious Scotch voice, bubbling with suppressed excitement, chuckle:

"We're knocking the splinters out of him! We've got him beat!"

Or, when he nears the buoy, with the enemy showing the gilt lettering of her name on her sternboard, and he says, "Noo, if ye're ver-r-y handy, lads, we may juist possibly squeeze in!"—why, it would make you "ver-r-y handy" if you were clumsy as a clodhopper before.

"Do it now" is pre-eminently Fife's working motto, although it it a safe wager he hasn't it hung up in a varnished frame in his shop. The real hard worker seldom takes the time for those frills, I've noticed, although there are exceptions. But once, for example, Fife was asked to look over a little boat of his design, to see if she couldn't be made stiffer and faster to windward. He

stared at her half a minute, while the owner held his breath, then said:

"Ay."

"What would you suggest?"

"Lowering her lead ballast and the deadwood of the fin 4 inches. It means designing a new keel."

"Well, how soon could you start work on the design, Mr. Fife?"

"Now."

And with that, he adjourned to the builder's shop nearby, wiped the shavings off the work bench, dug out a blue print of the original keel and started designing. Two hours afterwards six ship carpenters and a couple of leadcasters were at work on the new keel.

CHARACTERISTIC ATTITUDES OF ENGLAND'S FOREMOST YACHT DESIGNER WHEN AT THE HELM.

Another time, in a race in a strange boat—one he had designed and been asked to try out—Fife found the tiller too long. There was little enough room in the steering cockpit, anyway, for his burly figure, and to get to the other side he had to shift the tiller over his head every time she came about. And just at the start, in the hurry of tacking for the line, the tiller came over with a sweep while the great designer was trying to duck under it and watch his opponent at the same time. There was the traditional sickening thud. For a second it looked as though the deck would be spattered with the intellect of the Clyde; but by good luck it was the band of the skipper's cap, not the top of his head, that caught the blow, or the weight of it. The cap flew overboard to leeward; Fife, flushed with the blow and with temper, reappeared.

"Dom that tiller!" he said—he is not a swearing man, but he had cause just then—"it's clean spoiled my start. It's too long."

The owner, solicitous for the welfare of the great designer, assured him the tiller would be shortened at the first opportunity:

"But have ye a saw aboard?" asked Fife, rubbing the bump.

There was a tiny keyhole saw in the tool box, and with that and a clasp knife we whittled 6 inches off the tiller end, while the great skipper steered and the race went on.

"That's better," he said, when we ducked back to stations. "One can't do good work with the tiller crowding you out of the cockpit, any more than a rifle shot can pick bull's-eyes if the weapon's shoving him off the stand."

You can no more bluff Fife than you can bluff the rock of Gibraltar. He was in the weather berth once, on the port tack, dodging around the line. "The enemy," to leeward, and close aboard, hadn't room to clear us; but put his helm a-lee on the chance of forcing Fife to come about and then weather-bowing him. The yachts were side by side.

"I'm not coming about!" Fife sang out in warning to the other.

The headsails of the enemy fluttered. It looked like come about or a collision.

"I'm no coming about!" thundered the Clyde man, dropping a "t" from the not for emphasis, and keeping his own tiller firm amidships.

The other man realized that his bluff was called. Hard-a-weather went his helm. His boat was almost in the wind's eye, sheets and sails slatting wildly, everything adrift. She had just enough way on her to pay off. She went clear, but you could have cracked an egg between the two boats as she did.

Then, of course, Fife had her nailed. Before she had gathered way again we were on her weather bow. The back draught from our mainsail killed her. Every time she tacked we did the same. Fife's position was as impregnable as a stone wall. There was no passing us in all the buck to windward; and as it happened that we had the heels of her running, the race was ours from the start—and all due to the grit of the Scotchman.

House-boats for American Waters

By A. B. HUNT

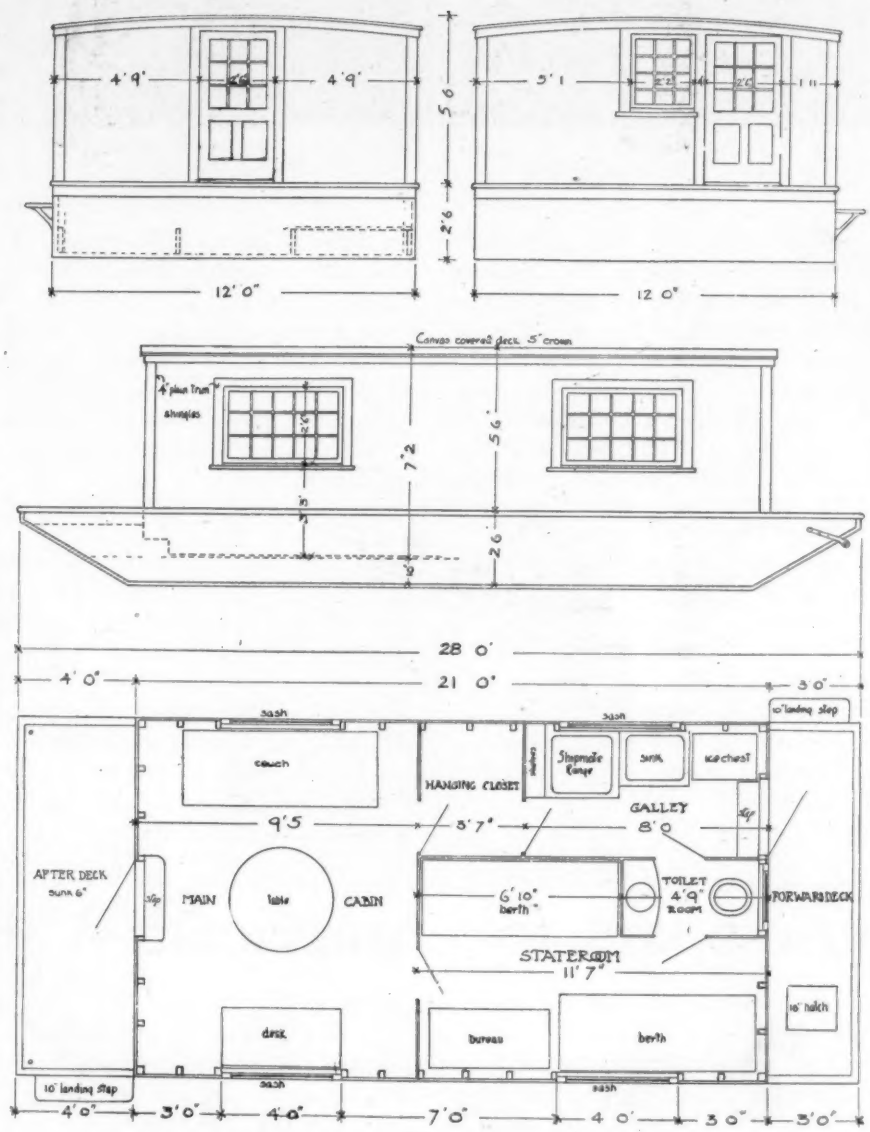
CONSEQUENT upon the increasing popularity of life afloat, a marked advance has been made in recent years in the design of house-boats, both large and small. House-boating has found many devotees; for, perhaps, nothing else so well satisfies the demand for recreation and at the same time solves the problem of a summer home for those who enjoy life on the water. The house-boat can be built to fit almost any purse, and there are few cities that have not, within an hour's journey, a suitable lake, river or bay where a house-boat may be moored, allowing the business man to go back and forth each day.

It has been said that, with few exceptions, American waters are not adaptable to house-boating, and that our Atlantic seaboard and its harbors are quite too exposed. This is absolutely untrue. From Halifax to Miami are to be found splendid, well-protected harbors and inland sounds. If our weather were constantly boisterous and unsettled, conditions would be different; but as in all parts of the country storms are the exception rather than the rule, there are but few days during the summer in which the most bulky and cumbersome house-boat cannot be towed from one snug anchorage to another without risk or danger.

ARTISTIC TREATMENT ADDS TO THE ATTRACTIVENESS.

The time is not far distant when one will be able to journey by house-boat from Massachusetts to Florida through a series of inland sounds and rivers, all of which are eventually to be connected by canals. In fact, much of this journey can already be taken, and scores of small yachts and house-boats make the inside passage from New York to Florida each fall in comfort and safety. The Pacific Coast is not so well adapted to house-boating as the Atlantic, but there are many good places where anchorages are to be found and where the life may be enjoyed to its fullest. Puget Sound, with its gorgeous scenery and thousands of bays and inlets, is one of the most desirable places for house-boats in the world. San Francisco Bay has had a flourishing house-boat colony for many years. The Gulf of California offers untold fascinations and attractions, while many chapters could be written on the possibilities of our inland lakes and rivers.

There are many types of house-boats, but in this article I shall deal specifically with but one, the only true type, known variously as the stationary scow or immobile house-boat. This type of boat has no means of propulsion; to move it from one place to another it is necessary to call into requisition a launch or tug. As a matter of fact, however, this is rather an advantage than otherwise; for in actual service house-boats exhibit a tendency to remain in one place when a location has been found that combines a good base for supplies, clean water, sheltered anchorage and accessibility. Then, too, there is eliminated from the boat the gasolene engine, which means a saving of room (no small factor in a boat of moderate size) and a saving of expense; for the house-boat propelled with a gasolene engine means a more expensively constructed hull, to begin with, while the cost of maintenance is also much greater.



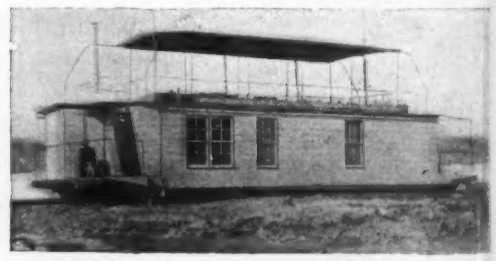
DESIGN FOR A 28-FOOT HOUSE-BOAT.

In design No. 1 a scow 28 feet long was selected as being the smallest boat on which a stateroom with accommodations for two could be secured, in addition to a comfortable and roomy cabin. On this boat the forward deck is 3 feet wide and the after deck 4 feet. A door in the center of the house leads from the after deck to the living room. This room is nearly 9½ feet long and almost 14 feet wide, with a window on each side. Under the one on the starboard side is a writing desk, while the couch, on which an occasional guest may sleep, is allotted a similar space on the port side. A round table is placed in the center of the room. Book shelves can be placed to suit the owner's taste.

On the starboard side of the forward partition is a door leading to the stateroom, which is 11½ feet long. Here are two iron couches with spring mattresses, 2 feet 6 inches by 6 feet 6 inches. On the right of the door is a large bureau, and over the end of the berth is a 4-foot window. A door leads from the port side of the main cabin through a large hanging locker to the galley, which is 8 feet long. The galley is fitted with a sink, range, ice box and shelves. A 4-foot window gives all the light needed. The toilet room, with set wash bowl, is between the galley and stateroom.

In this boat the planking on the bottom and the side pieces are of yellow pine 2 inches thick. There are 4 fore-and-aft stringers, 2 by 10 inches, laid on end. The studs measure 2 by 4 inches, except in the four corners, where 4 by 4-inch stuff is used. The deck beams are 1½ by 8 inches, with a crown of 4 inches in the center. The top of the cabin house is of ⅞-inch tongue and grove pine, and is covered with painted canvas, as are the decks forward and aft.

A 400-pound mushroom should be provided for this boat, with a chain for the bridle and mooring. A 10-inch landing step is located on the starboard side aft and the port side forward for the convenience of those coming on board from a launch or row-boat. This boat would cost, complete, in the vicinity



THE ROOF OF A ONE-STORY BOAT MAKES A ROOMY UPPER DECK.

of New York, without any fittings or moorings, from $350 to $400. To buy the material and build the boat one's self would cost about half that sum.

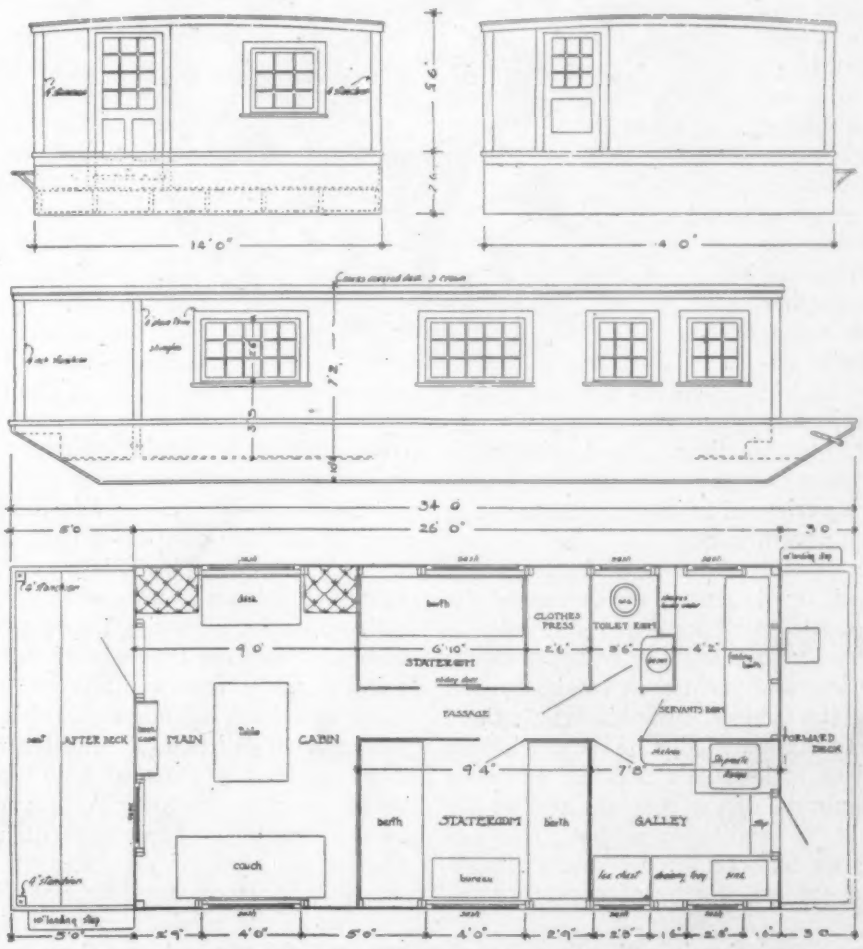
The larger of the designs here shown is a more pretentious craft than the other in that she has two staterooms and a small room for a servant. The house occupies a space of 14 by 26 feet on a scow 14 by 34 feet. This allows for a 3-foot deck forward and a 5-foot covered deck aft. The roof of the house is carried out over the after deck, and, being thus protected from the sun and rain, should prove a delightful lounging place except in boisterous or very wet weather.

INTERIOR OF LIVING ROOM OF A 34-FOOT BOAT.

The main cabin is 9 feet by 14 feet, with the door from the after deck located on the port side. On either side of the cabin are good-sized sash windows, and in the after end on the starboard side is another window. On either side of the writing desk seats are built in, covered with cushions. On the starboard side is a couch, which can be utilized for the unexpected guest. A roomy bookcase occupies the space between the door and the window in the after partition. The after deck is on the same level as the cabin floor; but, on entering, it is necessary to step over a sill, which prevents any water from getting inside.

A passage leading forward gives access to the other rooms on the boat. On the starboard side is a stateroom over 9 feet long. In addition to the two berths are a bureau and a chair. Forward of this room is the galley, over 7½ feet long. Here is found a complete equipment of necessary fixtures. The two small windows and the glazed door leading to the deck give ample light.

On the port side of the passage is a smaller stateroom, with berth, small bureau and chair. This room is lighted by a good-sized window, as is the larger room across the passage. Just forward of this room is a roomy clothes press, which will allow plenty of hanging space for those articles of apparel which cannot be kept in bureau drawers. The toilet room is 3 feet 6 inches wide, and contains a set basin. A small window gives light and ventilation.



DESIGN OF A 34-FOOT BOAT WHICH PROVIDES THREE STATEROOMS AND A LARGE LIVING ROOM.

Next forward, with a door opening from the end of the passage, is the man's, or servant's room, being convenient to the galley, yet not opening directly from it.

This boat is large enough to allow the upper deck to be used, if it is desired. Although stanchions are not shown on the drawings, it is a simple matter to have them put in place. The best kind are those made of galvanized iron piping. The uprights at the sides should be about 7 feet high, and the ridge should be about 12 inches higher. The awning should be of heavy duck and securely lashed to the iron framework. Side curtains are a great comfort, as they protect those on the upper deck from the slanting rays of the sun and the wind or rain. If the upper deck is used, it would be well to have the ladder leading to it placed on the forward deck, for if this were not done it would be necessary to cut a hole through the upper deck, which extends aft over the deck in the stern.

This boat is about the largest craft of this type in which the simple construction of fore-and-aft stringers can safely be applied without danger of wringing, particularly should the hull lie on an uneven bottom, if, by chance, she should be left high and dry on the bottom by the tide.

The same sized stringers are used in this boat as in the other, but there are seven of them. The thickness of the bottom planking and the sills is 2 inches, and yellow pine is the best material to employ. The studs are 2 by 4 inches, but are double at all window and door openings, and 4 by 4-inch studs are placed at the corners. The stanchions supporting each corner of the roof where it extends over the after deck are also 4 by 4 inches. The roof beams should be of 2 by 8-inch material, with crown of 3 inches. Tongue and grooved stock, 1⅛ inches, should be used on the cabin top, and this as well as the decks should be covered with canvas. Landing steps should be provided, as in

(Continued on page 432.)

The Compass—Its Errors and Correction

A PRACTICAL TALK FOR YACHTSMEN ON THE SIMPLER METHODS OF CORRECTING COMPASS ERRORS

By CAPTAIN E. T. MORTON

THE most practical use which has resulted from the study of astronomy is in the navigation of ships upon the ocean by observations of celestial bodies and calculations made by the almanacs and astronomical tables which have been computed by astronomers. Among these tables those by which the true compass bearing of the sun, moon, planets and certain fixed stars can be found when their altitudes do not exceed 60° and their declinations are not over 23° north or south, are of great importance, and are known as azimuth tables; for the compass is the most useful instrument of navigation, and it is very necessary to know whether it is correct or what the error is, if any.

There are various ways of finding the compass error, but the one most used is by taking bearings of the sun when rising or setting, or when at a low altitude. The officers of merchant ships when seeking a license are now examined much more strictly on their knowledge of the compass than formerly. A few years ago the captain of one of our coastwise passenger steamers was asked by a passenger if the sun ever bore to the northward of west when setting in the month of June. The captain replied "No," and then, glancing across the compass toward the setting sun, he was at once aware of his mistake. If he had been accustomed to correct his compass by such bearings, he would have known that whenever the sun's declination is north it rises at a point north of east and sets at a point north of west in north latitudes. This is mentioned merely to illustrate the occasional lack of even the simplest knowledge of this matter among men who should make it a study and know how to correct their own compasses, as, in fact, the majority of them do. The excuse for not using such knowledge is that ships are driven from one port to another with the utmost speed, and consequently the master does not feel it advisable to stop his ship and swing her around for the purpose of adjusting compasses, thereby consuming valuable time. In steering their usual courses in clear weather, any change in the compass is soon noticed, and, if necessary, an experienced adjuster is taken along to readjust it, and to make out a deviation card.

Compass card, showing two methods of numbering the degrees.

Strange changes occur in compasses at times, and one case is recorded of a ship being struck by lightning, which caused the poles of the compass to change, the north point of the needle being directed to the south. This makes the study of the compass extremely necessary in navigation, and yachtsmen would do well if they understood more about the subject. In this article there will be found but little to add to the knowledge of those who are already familiar with the subject, as its object is rather to create an interest in those who are ignorant of the compass and its adjustment. While many delight in handling a sextant, few feel any desire to study anything so common as a mariner's compass, which is, nevertheless, a subject worthy of careful attention.

A mariner's compass needs no description here, it being enough to say that it should have at least two or more pairs of short magnets of good directive power and not sluggish in movement. On account of its steadiness, a spirit compass is better for small boats than a dry compass. In placing it on any kind of vessel, see that it is located exactly amidships in a fore-and-aft line with the keel. Care should be taken to place it in a position away from the attraction of any great mass of iron, such as a bulkhead, engine or any iron which is liable to be moved. It should also be kept away from the influence of a dynamo. After putting the compass in the binnacle, take the position of the vessel's head by the lubber point. Then turn the compass the opposite way around, bringing the lubber point which was on the after side, forward. Sometimes an error of one-quarter point is found in this way in the marking of the lubber points on the margin of the compass bowl.

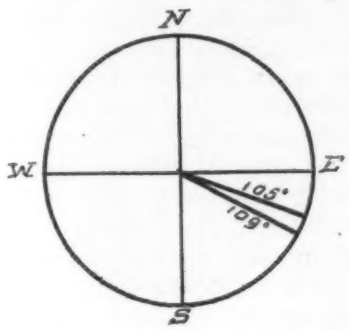
The needles of the compass point to the magnetic poles and not to the geographical poles, the difference of direction being called the variation of the compass. This variation is not the same all over the world, in some places there being no variation, while in other places it amounts to 40° or 50° east or west. This is always shown on any reliable chart, and must be reckoned in laying out any course. The deviation of the compass is the difference between any course by ship's compass and the true magnetic course, caused by the disturbing influences by which the ship's compass is surrounded, such as iron used in construction, machinery, cargo, iron ballast, and various other causes. This deviation changes on different courses, owing to the position of the disturbing factors in relation to the poles of the compass needle. Even after a compass has been compensated for its various errors and adjusted by an expert, large errors occur; and it is best to know how to discover them before they cause trouble.

The most convenient as well as the most practical method for finding the compass error is by taking compass bearings of the sun when rising or setting and comparing such bearing with the true bearing, which can always be found in the azimuth tables. For this purpose an azimuth compass is necessary, which is usually the ship's standard compass placed in a position to sweep the horizon. An azimuth compass is an ordinary compass fitted with movable sight vanes for observing the bearings of the sun or other celestial bodies. The true bearings of the sun are found in Burdwood's azimuth tables from latitude 30° to latitude 60°, inclusive, both north and south latitudes. Davis's azimuth tables include the azimuths from latitude 30° north to latitude 30° south, inclusive. These tables give the sun's true bearing between sunrise and sunset for every four minutes A. M. and P. M. when it is at an altitude of less than 60°. The arguments used are the latitude and sun's declination when of the same or of contrary names (north or south), and the apparent time at ship.

Now, by the azimuth compass take a bearing of the sun when at a low altitude and note the apparent time at ship. Then with the approximate latitude, declination and time, inspect the azi-

muth tables and take out the corresponding true bearing. The difference between the observed bearing and the true bearing will be the error of the compass for that point of the compass to which the ship was headed when the bearing was taken. If the true bearing is to the right of the observed bearing the error will be named easterly, but if to the left it will be named westerly. To the error apply the variation to find the deviation. If the error is *greater* and of the same name (east or west) as the variation, the difference will be the deviation of the same name. If of the same name, and the error is *less* than the variation, the difference will be the deviation of opposite name. If, however, the error is east and the variation west, or vice versa, the sum will be the deviation, named the same as the whole error. This result will be the deviation of the compass for the point on which the ship was headed at time of observation.

For example: On March 1, at 7.48 A. M., Lat. 23° north, Long. 80° west; course north.



105° is the observed bearing, and 109° the true bearing taken from the azimuth table. In this case the true bearing, being to the right, is named easterly.

Sun's observed bearing	N. 105° East
Sun's true azimuth (or bearing)	N. 109° East
Error	4° East
Variation	2½° East
Deviation	1½° East

To take another example where the true bearing is to the left of observed bearing:

Sun's observed bearing	N. 114° East
Sun's true azimuth (or bearing)	N. 109° East
Error	5° West
Variation	2½° East
Deviation	7½° West

The azimuth tables published by the U. S. Hydrographic Office (price $1.00) include the whole range from 61° north to 61° south, the principal difference from the other tables mentioned being in their giving the bearings for every ten minutes instead of every four minutes. The true bearings of the moon, planets and some fixed stars can be found from these tables when their declinations are not over 23°. This, however, involves some extra calculations, as the apparent time at ship cannot be used as in the case of the sun. To find the error of the compass for every point, the ship must be slowly swung around and bearings taken with her head on each separate point. It is a good plan to keep a record of these observations in a book of convenient size for future reference, one page being devoted to each point of the compass. The following form will be found convenient:

Date.	Time.	Position. Latitude.	Long.	Course.	Comp. Azimuth.	True Azimuth.	Error.	Var.	Div.	List.
March 10	5.30 p.m.	28° 45′ N	74° 54′ W	W. N. W	N.95½°W	N.97°W	1½° W.	1½° W.	0	5° pt.
Feb. 24...	5.35 p.m.	28° 54′ N	78°28′W	W. x S.	N.100°W	N.101°W	1° W.	0	1° W.	0

In taking out the true azimuth from the tables be careful to observe at the top of the page whether the latitude and declination (north or south) are of the same or contrary names. To get the correct local apparent time, the time taken from the chronometer can be corrected for difference of longitude to get the local mean time. To this apply the equation of time to get the apparent time at ship. The apparent time can also be obtained by taking an altitude of the sun and working it out as in a sight for longitude. If on the coast, where standard time is used, this time may be corrected for any difference of longitude east or west of the standard meridian.

If, for instance, New York time is used, which is of the 75th meridian, a correction of four minutes must be *added* for each degree east of this meridian, or *subtracted,* if west.

Another way of finding the deviation may be often used when in the smooth water of some bay and away from the disturbing influence of any local attraction. One observer should take a spare compass on shore and set it up in a position where he can take the bearing of the azimuth compass on board the vessel. The exact opposite bearing will be the true magnetic bearing of his position from the vessel. Now by swinging the vessel around on a pivot, bearings of the shore position can be taken on board as the vessel's head is brought on each point of the compass, and courses and bearings noted. The differences of the bearings from the opposite bearing taken by the observer on shore will be the amount of deviation on each respective point.

Still another easy way for vessels on the coast to take the bearing by compass of two lighthouses when they are in exact line with each other where their true magnetic bearing from each other is known by chart or other government publication. The difference between this bearing and the one observed by compass will be the deviation for the point of the vessel's head.

Some years ago, while one of our large sailing ships was in a seaport in China, the master, thinking his compass had considerable deviation, took it from his own ship to another ship in the harbor to correct it. His idea was to place his own compass beside the other ship's compass to find the difference. His idea was a poorer guide than his compass. It must not be inferred from the instances related that ships' officers do not understand compass work, as the majority of them are well informed on this subject.

Most compass adjusters use a pelorus for determining compass error and deviation, and this method is sometimes used on coasting steamers; but as it requires a specially prepared stand and instrument, I have not gone into it here, but have confined myself to the simpler forms of compass correction, which may be used by yachtsmen. Anyone wishing to pursue this subject further can obtain plenty of books from which good, solid information can be acquired; and then, to more thoroughly understand it, it is best to put the knowledge thus gained to a practical test, by correcting his own compass and making out a deviation card.

Installing Power in Small Craft

By K. E. TREADWELL

Illustrations by Courtesy of Thrall Motor Company, Atlantic Company and Waterman Marine Motor Company

IF you happen to be the skipper of a sailing dory or the owner of a St. Lawrence skiff or a canoe, it is more than probable that you at times suffer from peevishness as a power boat shoots past you while you are sailing close into a head wind or bucking a strong tide under paddle or oars. If so, don't despair, but take a reef in your grouch; for it is possible, nay, it's even quite practicable, for you to equip your boat with a kicker that will convert her into a satisfactory little power craft, and allow you to get along at a speed that will pass many of the power boats whose owners have been facetiously offering you a tow during past seasons.

If you happen to be the owner of an 18-foot St. Lawrence skiff—a mighty fine type of row-boat, by the way—you ought, with a 2-cylinder, 5-horsepower motor, to get a speed of from 8½ to 9 miles per hour from her. Such a motor, with cylinders of 2¾ inches bore by 3 inches stroke, and weighing less than 70

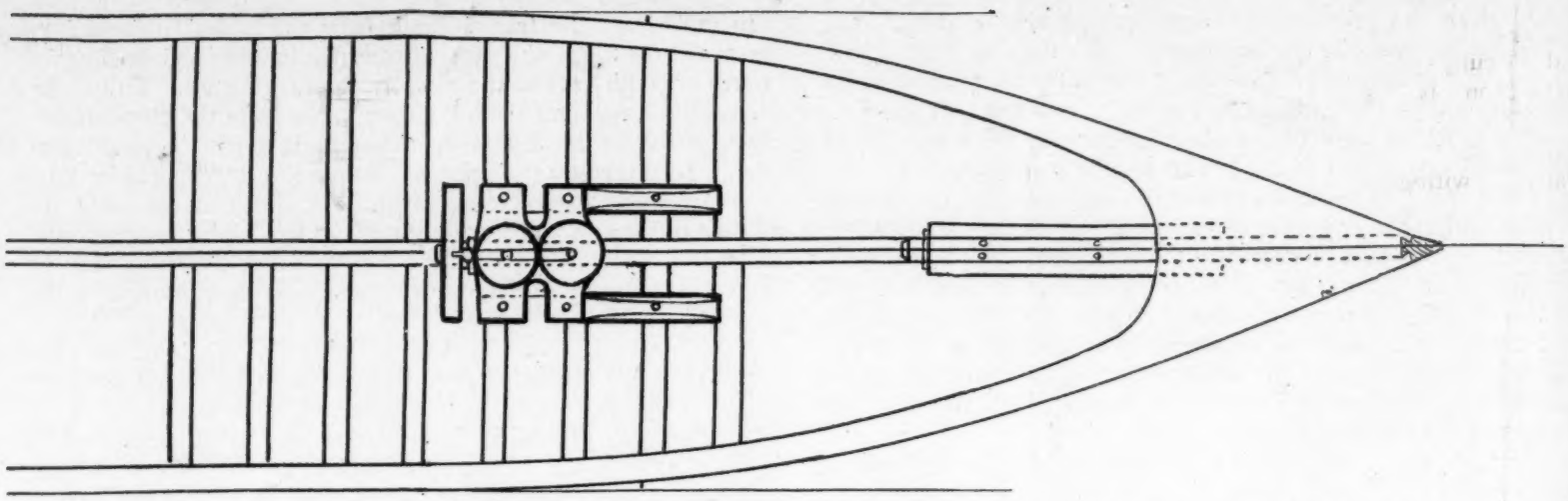


Fig. 1.—Top view of installation plan of a two-cylinder, light-weight, two-cycle engine in an 18-foot St. Lawrence skiff.

pounds, can be purchased complete, with propeller, shaft and electrical equipment, for a very moderate sum.

By installing the engine fairly well aft, where the body of the boat is sufficiently full to sustain the weight, you will find a saving in both weight and expense over a position that requires a longer propeller shaft. Figures 1 and 2 show top and side views of the installation plan of a motor such as has been described above in an 18-foot St. Lawrence skiff, while Fig. No. 3 is a diagram of the engine bed. In this diagram No. 2 is a side view of one of the fore-and-aft bed pieces, of which there are two. These are made from 2-inch white pine or mahogany, are 5½ inches high at the forward end, 4½ inches high at a distance of 8 inches from the forward end, from which latter station they taper down to about 1 inch in height at the extreme after point. The lower forward corner on each side piece has a square notch, 2 x 2 inches, cut from it, into which a 2 x 2 cross girder fits.

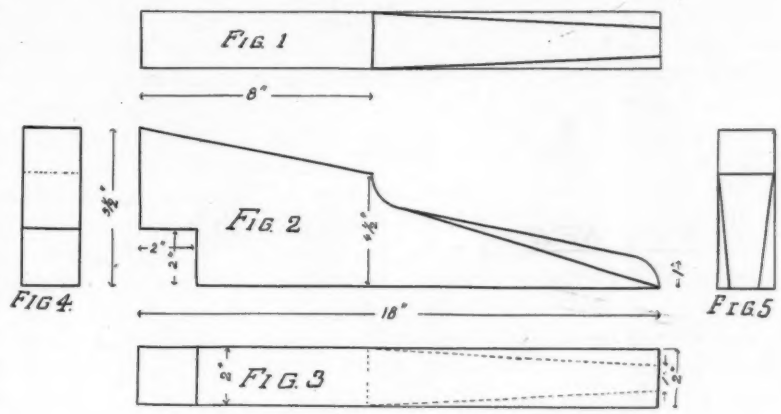


Fig. 3.—Diagram of engine bed for St. Lawrence skiff.

It will be noticed that that portion of the upper surface of the side bed pieces upon which the engine rests slants at an angle of 10 degrees from the horizontal, so as to obtain the right rake for the shaft. Ordinary carriage bolts (galvanized or bronze) with flat heads secure the foundation timbers; these bolts pass through planking, ribs and timbers with the flat heads of the bolts on the outside. They should be well wrapped with wicking saturated with white lead, or rubber gasket packing may be placed under the head of the bolt instead. This latter is a very simple operation, and has been known to prevent leakage after three or four years of use. In Figure 1 three such bolts are shown, although sometimes but two are used. The forward bolt shown goes through side bed cross piece, rib and packing, and it is also well to pass a bolt up through the keel and through the center of the forward cross piece.

The shaft log is gotten out of two pieces of white pine or cypress timber, one 21″ x 3″ x 4″, for use inside, while another piece, 10″ long and 3″ x 4″, is used for the outside portion of the shaft log. These two timbers are planed down on lower surfaces to take the angle of the shaft through their center. As the keel of a St. Lawrence skiff runs from 1½ to 2 inches in width, and the propeller shaft is but ⅝ inch in diameter, there is room for ⅜-inch bolts to pass through the shaft log and keel, bolting the two sections of the shaft log together. As Figure 2 shows, there are eight of these bolts in the shaft log, making four on each side of the shaft. Before bolting the shaft log in place, a strip of canvas, 3 inches in width and liberally white-leaded on each side, should be placed between each section of the shaft log and the keel, so that when the bolts are tightened up a

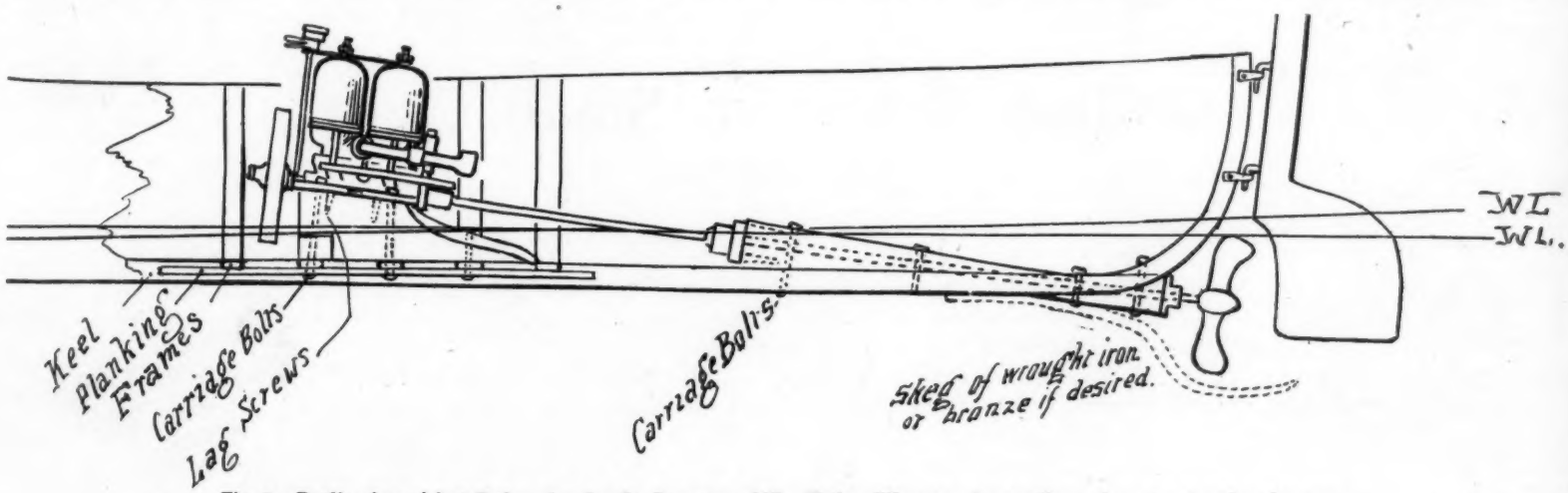


Fig. 2.—Profile view of installation plan for St. Lawrence skiff. Notice difference of water lines when at rest and under way.

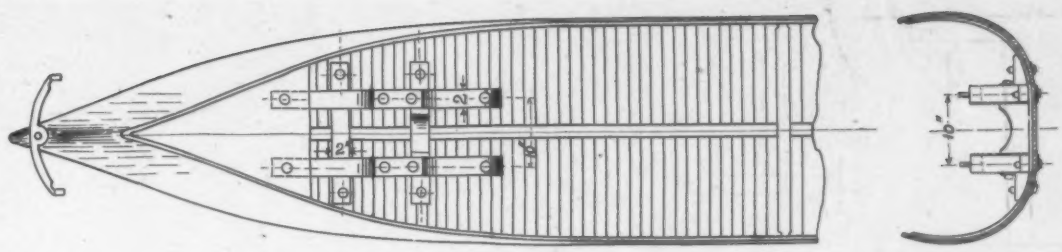


Fig. 4.—Top view and cross-section, showing engine bed for the 17-foot canoe.

watertight joint is obtained. The one real difficulty in this installation is the boring of the shaft log, and this is a job that could with good reason be given to a boat-builder or skilled mechanic whose ability to bore straight and true through both sections of the log and keel is unquestioned.

Figure 2 shows a two-bladed propeller 10½ inches in diameter and 16 inches pitch. The engine shown will turn this at from 800 to 900 r. p. m., depending upon lines and weight of hull. Should the latter be very heavy and full, a three-bladed wheel of 12 inches diameter and 20 inches pitch would give better results. This should be installed so that the upper tip of the blade is just a trifle below the waterline when the boat is at rest. As soon as the boat gets under way she will drop a couple of inches, entirely submerging the blade. A skeg of wrought iron or bronze, shaped as shown by the dotted line, will protect the propeller from damage, and will also increase the draft of the boat.

Figures 4, 5 and 6 show how a single-cylinder, 3-horsepower motor weighing 60 pounds may be installed in a 17-foot canvas-covered canoe. The long side bed pieces, as well as the cross pieces, are of 2-inch stuff. The top of the side bed pieces are beveled so as to give a pitch of from 10 to 15 degrees to the shaft. These side bed pieces are fastened to the boat by ½-inch carriage bolts, passing through timbers and planking as in the case of the St. Lawrence skiff. The keel of a canoe of the canvas-covered type is so narrow that it is inadvisable to attempt bolting the cross pieces down through that portion of the boat's anatomy. In the installation plan shown no inside shaft log is used. Instead, a triangular timber of 2 inches in thickness and about 12 inches in length on the under side and 4 inches in depth at the after end is securely bolted to the broad, flat timber in which the stern piece of the canoe is set. Between this outer log, which should be shaped to fit the curve of bottom, and the keel is laid a strip of canvas, white-leaded, as described in the installation plans of the skiff previously mentioned. The outer log is held in place by four carriage bolts ½ inch in diameter, and the boring through this is a comparatively easy task. The angle given to the shaft should be such that there will be 2 inches of water between the 12-inch propeller blade and the bottom of the boat.

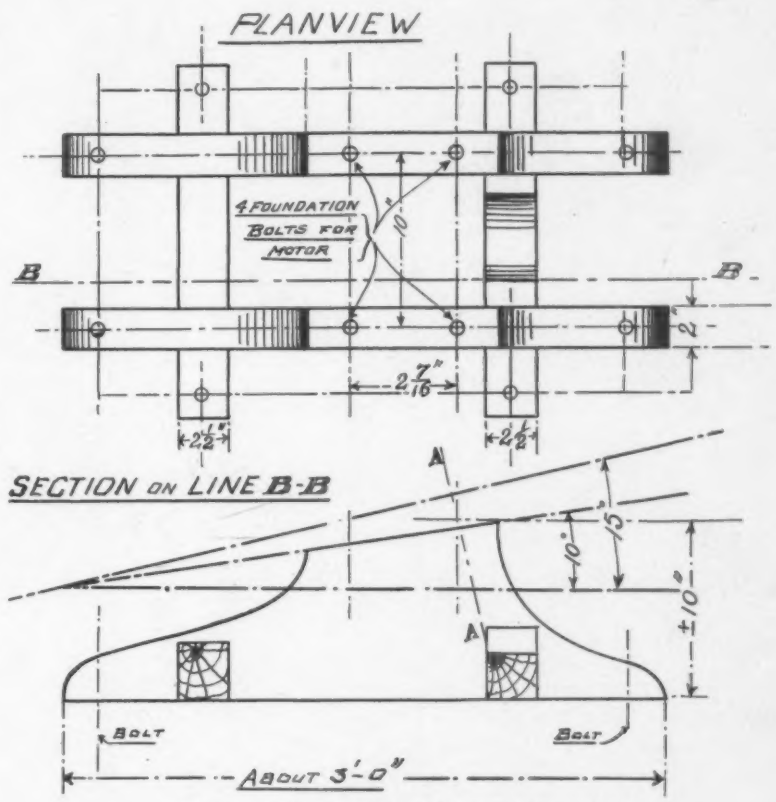


Fig. 5.—Details of engine bed for 17-foot canoe.

The arrangement of the rudder post, while it may appear complicated, is really extremely simple and very strong. Two wooden blocks of the shape shown are fastened over the stern piece, and a brass tube of sufficient inside diameter to hold rudder post without play is run through the holes bored just to one side of the stern post. The top and bottom of this tube have a thread cut on the inside to accommodate a brass lock nut, these lock nuts being drilled for the passage of a brass rod ½ inch in diameter to serve as a rudder post. The lower end of this rudder post is clipped for the insertion of a rudder blade of brass or galvanized iron. The lower end of the rudder post rests on a skeg, bent as shown in illustration, and wide enough at its forward end to take the four carriage bolts which hold the skeg in place. By placing the rudder posts to one side of the stern piece the boat is not weakened structurally.

A 17-foot canvas-covered canoe with a 3-horsepower engine, as shown, ought to be able to make at least 10 miles an hour. The rake of the shaft, it is true, is greater than that which is considered to give the best results; but canoes so equipped have been known in actual performances to work satisfactorily, which, after all, is more than mere theory.

The last illustration shows a very simple and easily constructed engine bed, which can be turned out by any amateur. Lest the very simplicity of its construction should make one distrust-

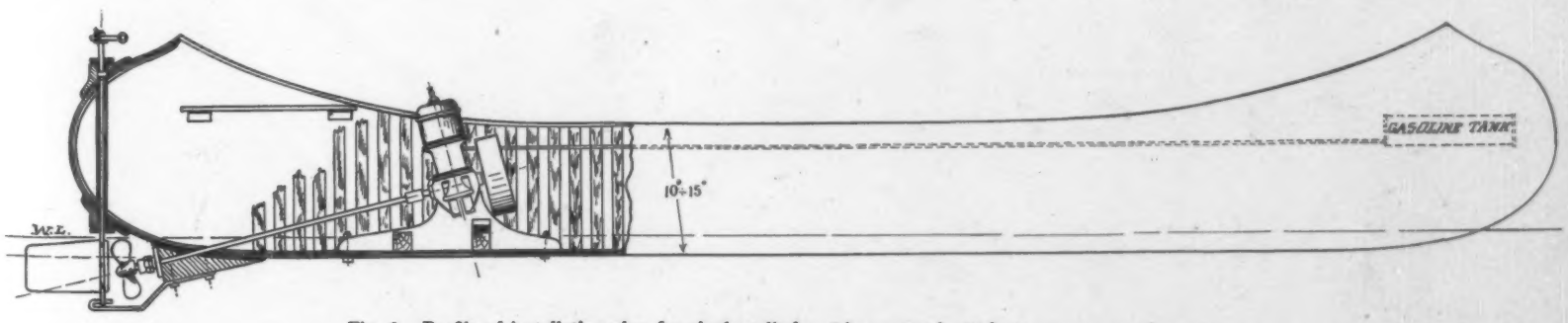
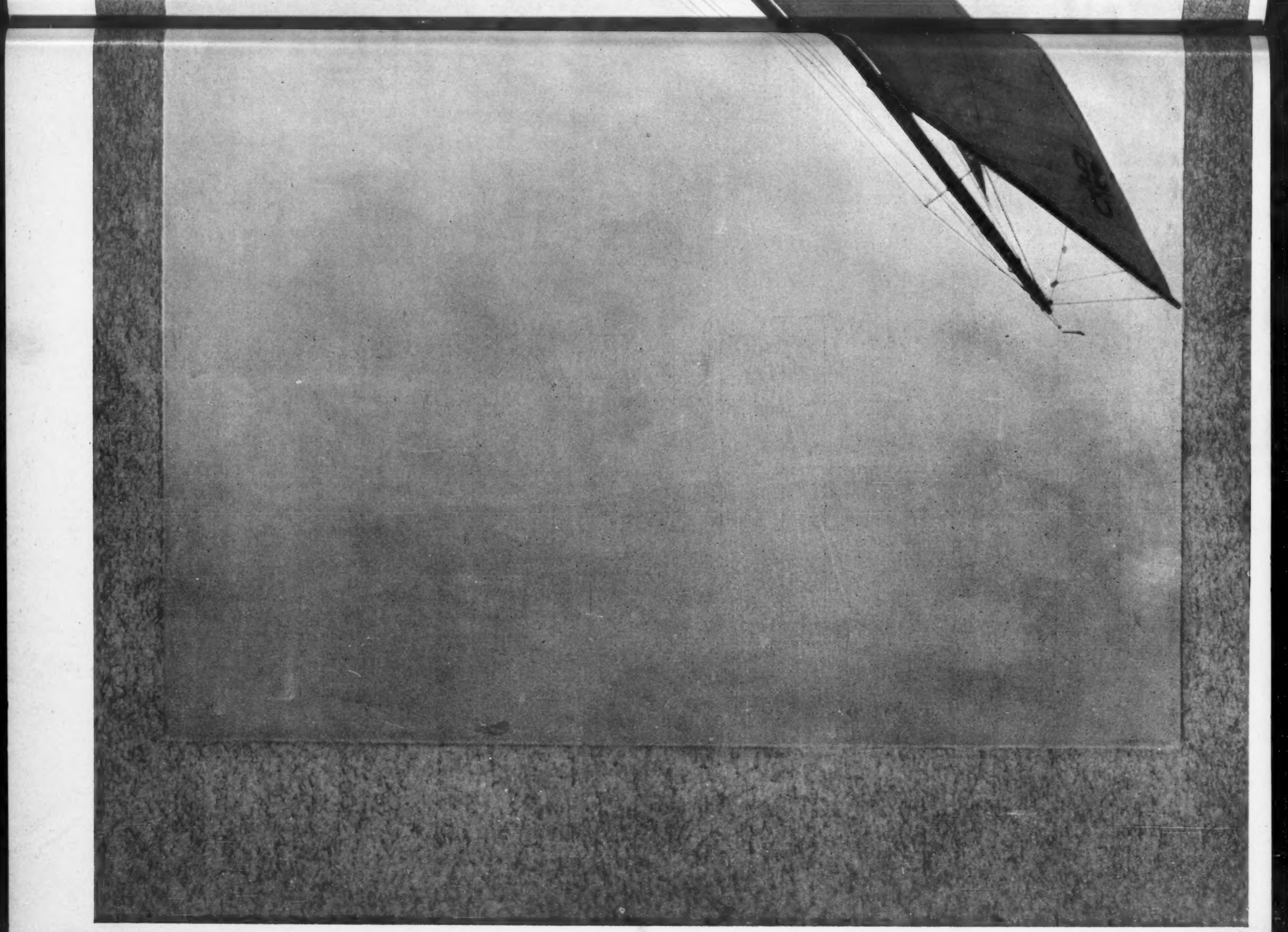
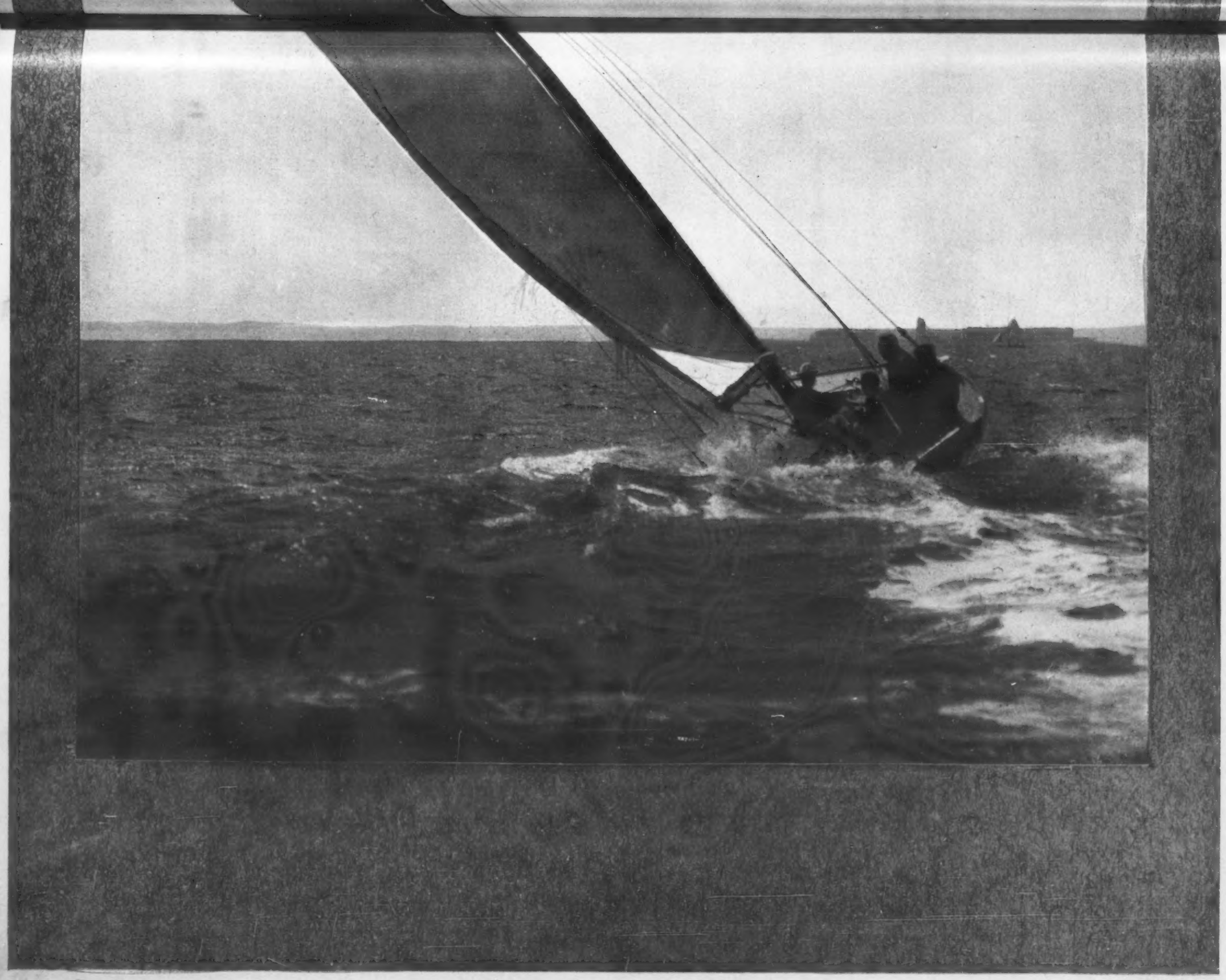


Fig. 6.—Profile of installation plan for single cylinder, 3-hp. motor in 17-foot canvas-covered canoe.





WHEN THE SPINDRIFT FLIES. ELEANOR DOWN TO HER SAILING LINES.

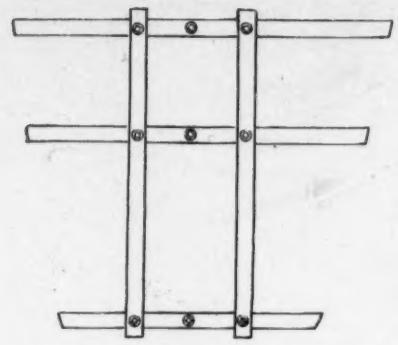


FIG 3

Top view of engine bed for dory.

ful of it, it might be well to state that it is a pattern used by the builders of one of the best-known makes of dories for engine installation in their own craft.

Fig. 1 shows the engine runners notched over cleats or cross pieces, and with the upper surface cut to suit the angle of shaft. Fig. 2 shows forward view of the bed, illustrating how the cleats or cross pieces are fitted to shape of side planking and bolted through the keel at center. Fig. 3 shows the length of these cleats, varying to suit the increase in beam of the boat from stern toward the bow. It will be noticed in No. 1 that, in lagging the fore-and-aft pieces through the 'thwartship cleats, the forward lag screw holes are countersunk, allowing the runners to project over the forward cleat sufficiently to provide a fastening for the two forward lags of the engine bed. Careful fitting at the intersection of the cross pieces with the side bed-runners, thereby eliminating play, is the point upon which satisfactory service of such a bed is based. Unless there is excessive vibration of the engine, it will not be necessary to fasten the cross cleats through the planking.

Solid construction, tightly-fitting bolts and joints, and the distribution of weight, strain and vibration over as great an area of the interior of the hull as possible, are the secrets upon which a satisfactory engine bed depend. It is far better to make your bed too heavy than to have it too light. It is safe to err on the side of strength.

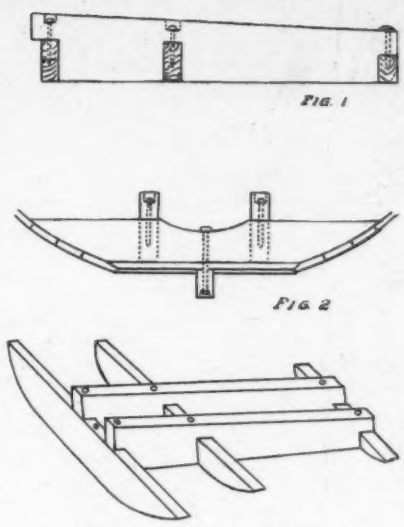
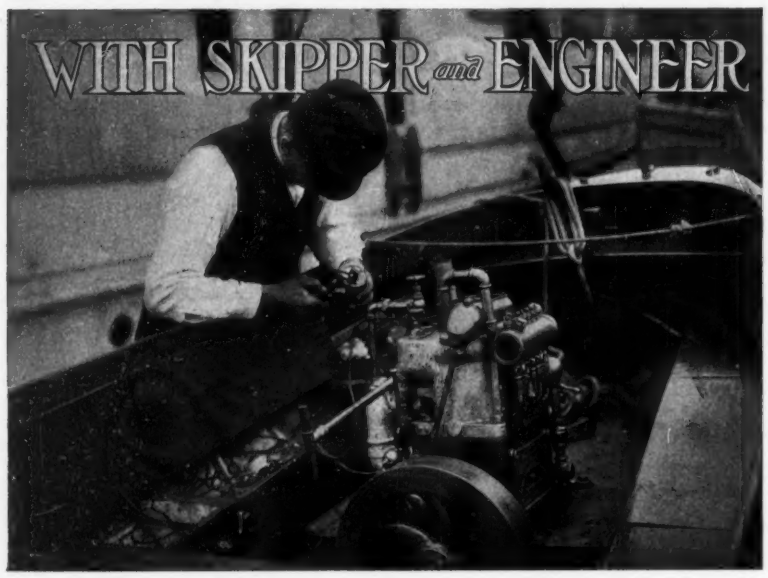


FIG. 1

FIG. 2

An easily made engine bed for a dory.



Getting the Proper Mixture

EVERY one who has used a gasolene motor knows the value of having just the right mixture and of having the carburetor properly adjusted. A few of the things necessary to be borne in mind in regard to the adjustment and manipulation of the carburetor may well be repeated for the benefit of those who do not feel themselves familiar with the subject. The quality of the mixture is the all-important thing both in the matter of obtaining the most power and in economy of consumption. What the proper mixture is for a particular engine can only be determined by watching the engine closely while it is running. If the ignition system is working properly, the missing of explosions in a four-cycle motor, with black smoke issuing from the exhaust, means too much gasolene. On the other hand, missing explosions and a general erratic action of the engine without any black smoke denotes too little gasolene or fuel.

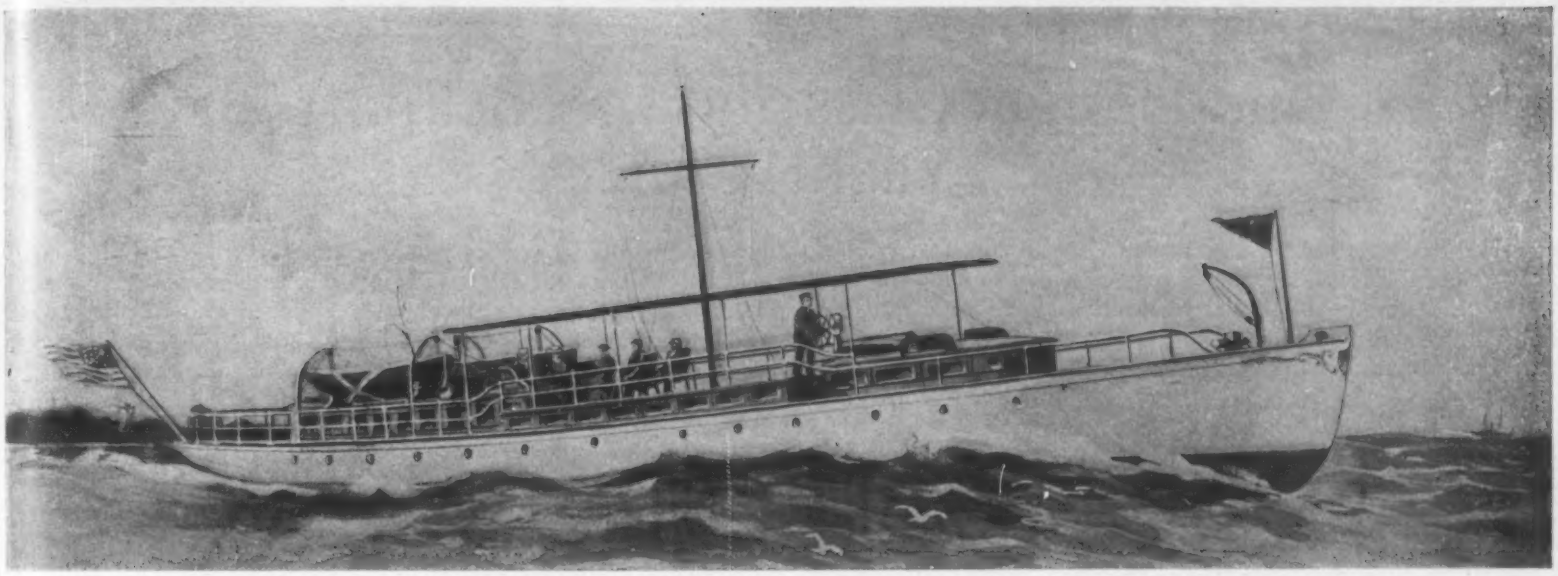
In a two-cycle motor an excess of fuel is manifested by a missing of every other explosion—commonly called four-cycling—while base explosions may denote a lack of gasolene, and are always accompanied by serious loss of power. It is necessary to get the carburetor properly adjusted between these two sets of conditions, and with the ordinary motor, especially those of low speeds, not much change in this adjustment will be necessary except where great changes in atmospheric conditions occur. It also follows that the mixture that gives the greatest power in the motor is also the most economical from the standpoint of consumption of fuel. There is an old adage, "Adjust for power and the price will take care of itself."

Smoke issuing from the exhaust may also mean too much cylinder oil, and should not be mistaken for too much gasolene, the latter being accompanied by missed explosions. In the former case let the carburetor adjustment alone.

Making an Aperture for the Propeller in Auxiliary Installation

In converting a sailboat into an auxiliary by installing a small motor, one of the most difficult problems that confronts the builder on some of the models is to get enough room for the propeller aperture. The simplest way of arranging this is to cut as much as possible out of the stern post and the balance out of the rudder post, provided that a sufficient aperture cannot be cut out of the stern post. If, however, the stern post is narrow, this may weaken it, and it is certain to weaken the rudder if the rudder post is cut through. In this case both rudder and stern post must be strengthened by stout iron straps on both sides. In some cases the planking comes so far aft on stern post as to prevent any cutting away being done, and in these cases the entire aperture is cut from the rudder. This seriously weakens the rudder, and also impairs its efficiency to a certain extent. When cutting the hole in the rudder remember that the rudder will sometimes be put hard over, and the aperture must be large enough to clear the revolving propeller blades in whatever position it may be in. The strongest way, if there is not enough room in deadwood or stern post to admit of proper alignment of shaft, is to move the whole rudder further aft, filling up the old rudder trunk and fitting an iron skeg or shoe to the heel of the stern post and the foot of the rudder post. This requires the making of a new rudder trunk and entails more structural changes, but it insures proper clearance to the propeller and makes a much stronger job. Unless one is familiar with the work, it had better be done by a boat-builder.

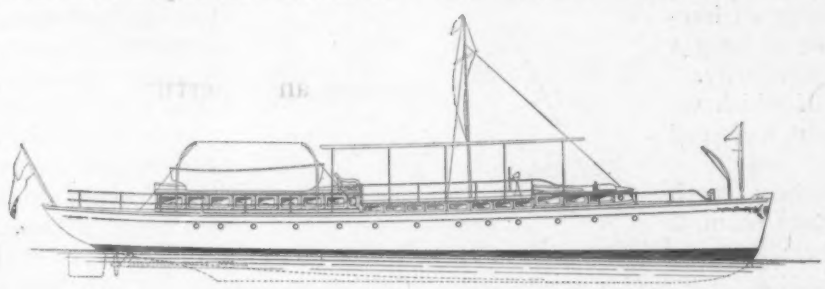
In this latter case an iron rudder and rudder post, such as are used on a launch, are sometimes substituted; but, if the best results are to be obtained under sail, a wooden rudder of the same size as the old one is best.



An 80-Foot Yacht for Canal Service

THE 80-foot cruiser designed and built by the Gas Engine & Power Company and Charles L. Seabury & Co., of Morris Heights, New York City, for the New York State Public Works Department for canal service, represents a type in which a generous amount of cabin room with plenty of light and ventilation is combined with an unusually liberal allowance of deck space.

The craft is 80 feet in length over all, 70 feet 6 inches on the waterline, 13 feet 7 inches beam, and 3 feet 3 inches draft. The light draft is essential for service through the canals. The bow is straight, raking slightly, and the canoe-shaped stern leaves the water at a very graceful curve.

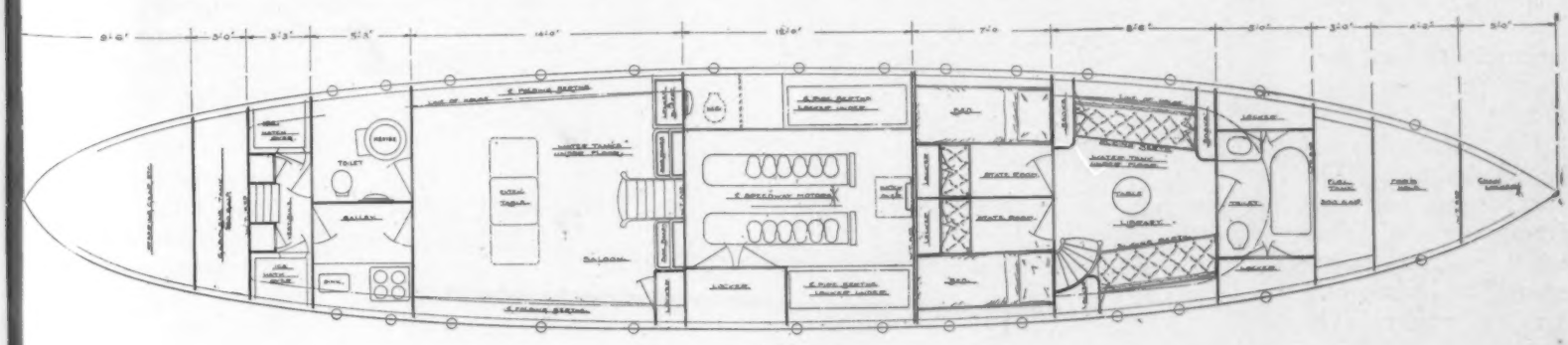


In addition to a line of port lights, the cabins are lighted and ventilated by a very attractive arrangement of the cabin trunk. The forward portion of this trunk is curved, with port lights on sides. Aft of this, side windows give light and air. The after third of this trunk is raised almost to the height of a deck house, and is brought in at the sides to allow of side decks. Chain lockers are located in the extreme bow, and these are separated by a watertight bulkhead from the forward stowage space, 4½ feet in length. Aft of this comes the fuel tank of 300 gallons capacity; then, partly under the forward end of the trunk, comes the toilet and bathroom, the full width of the boat and 5 feet in length. The library is aft of this, with sliding berths and lockers on each side and a table in the center. Two staterooms, each fitted with a bed, locker and seat, open off the library.

From the starboard side of the library a curved stairway leads to the bridge deck. Aft of the staterooms is the engine room, extending across the full width of the hull, in which are two 6-cylinder, 4-cycle Speedway motors, each of which develops 90 horsepower at 600 revolutions per minute.

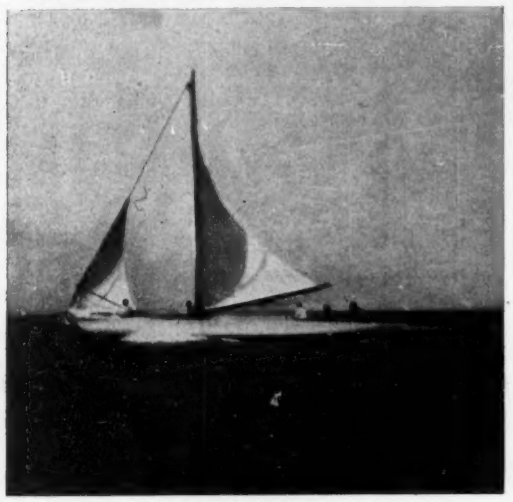
Two pipe berths on each side of this compartment allow of a crew of four men being housed in the engine room. On the starboard side is a large locker for tools, supplies and extra parts. A brass ladder in the center of the forward engine room bulkhead leads through a hatch to the bridge deck. It will be seen that the engine room is entirely cut off by means of watertight bulkheads from both the staterooms forward and the large after saloon. This latter compartment is 14 feet in length and extends across the boat. It is entered by a companionway from the bridge deck, and contains two folding berths on each side and an extension table in the center. It is well supplied with lockers, buffets and sideboards. Aft of this on the starboard side is a galley, with a four-hole coal-burning stove and sink. On the port side is a toilet room, containing in addition to the usual fixtures a hot-water heater, which heats the boat throughout when the state of the weather requires it. Aft of the galley, and separated from it by a bulkhead, is a 3¼-foot vestibule, on each side of which is a large ice chest, whose combined capacity allows the carrying of 500 pounds of ice. This vestibule leads to the after deck, under which is a gasolene tank of 300 gallons capacity.

Although designed for use on inland waterways, the arrangement of her weights is such that she will make an excellent seaboat, her engine room being in the waist.



A One-Design Class for the Bellport Bay Yacht Club

THE Bellport Bay Yacht Club is to have a new 17-foot, one-design class of sloops this season, which should add much to the racing of the Great South Bay Yacht Racing Association. These boats are from the board of John B. Connolly, Jr., of Brooklyn, and the design shows a fine-looking little boat, undoubtedly fast, and especially adapted to the waters of Great South Bay. Already six of these boats are under construction at the shops of J. W. Overton, of Bellport, for members of this club, and in all probability six more will be built before the season opens.



RACING ON BELLPORT BAY.

For racing on Great South Bay the jib and mainsail knockabout is pushing the older catboat hard, and nearly all the clubs in the association now have classes for this rig. With the better balance and more delicate helmsmanship required, together with the additional advantage of having light sails and a jib to handle to keep a crew busy, the rig is gaining in popularity.

The dimensions of the boats, of which we publish herewith the construction and sail plans, are as follows:

Length on deck, 26 feet 4¾ inches; length on load waterline, 17 feet; extreme beam, 8 feet; extreme draft, 1 foot 8 inches; least freeboard, 1 foot 4 inches; weight outside (lead), 400 pounds; sail area, 379 square feet; rating, 17.86.

These boats, as may be seen by examining the plans, are well constructed, with plenty of cockpit room, and have bulkheads forward and aft of the cockpit, making airtight compartments. They are designed equally for seaworthiness and comfort as well as speed. As they are smaller replicas of Alva, Class P champion of 1908 of Great South Bay, they should prove extremely fast.

The construction will be of the best. The stem, stern post and frames are of clear white oak, the latter spaced 10 inches, center to center. The planking will be of ¾-inch cedar, with a top streak of yellow pine, while the deck will be a ¾-inch cypress, with an oak king plank. The boats will be very thoroughly fastened with copper rivets and galvanized screws or bolts.

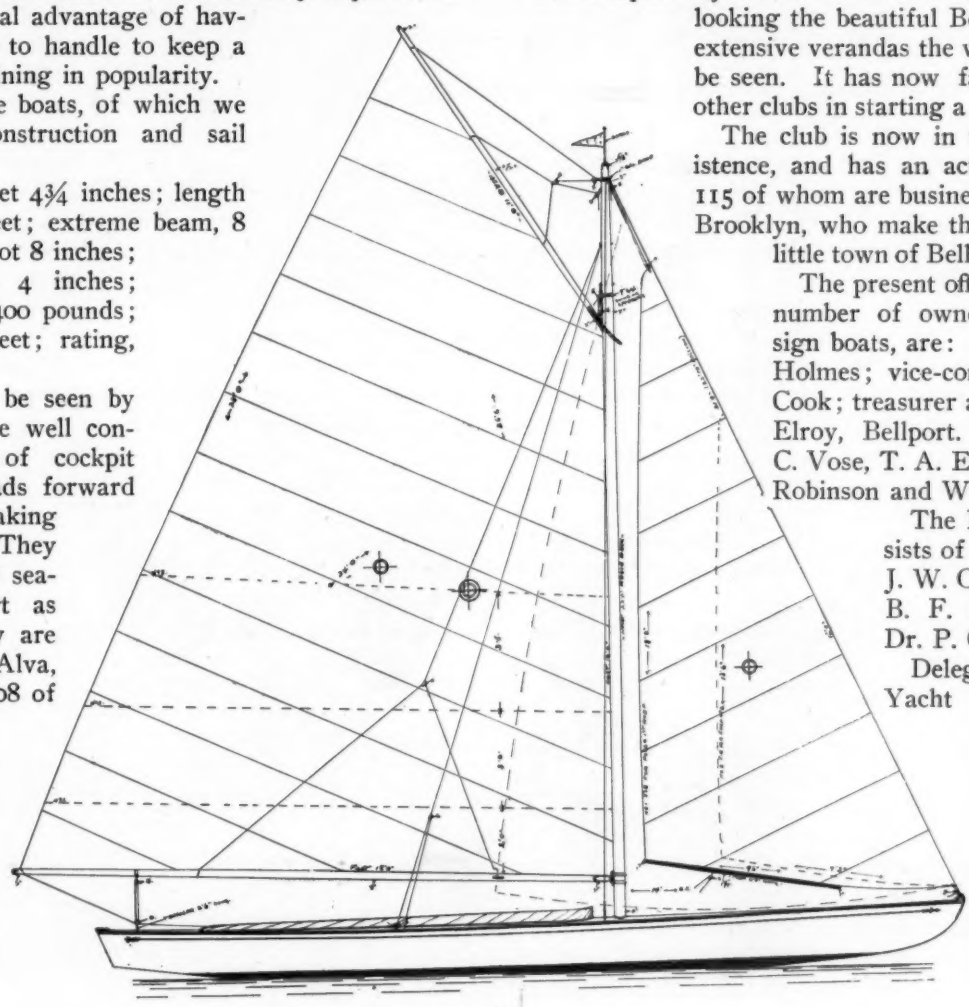
The spars will be solid and of spruce, while the rigging will be wire, with all blocks, cleats and fair leaders of brass, and turnbuckles of tobin bronze. The sails will consist of jib and mainsail, with storm jib and ballooner, made up of 6-ounce Lowell duck and cross-cut as shown in the sail plan.

The boats have a good-sized cockpit, with a large amount of deck room. The outside lead is sufficient to insure stability, and they should be able to carry their sail well in a locality where fresh breezes are the rule rather than the exception.

The Bellport Bay Yacht Club was organized at Bellport in July, 1906, with Mr. Isaac Snedeker as Commodore. The purpose of the club was to encourage and promote the racing of yachts and good-fellowship among its members, and to further these objects the club was incorporated in June, 1908.

Stimulated by the efforts of this club, there has come into being the Great South Bay Yacht Racing Association, composed of the Pentaquit Corinthian, Unqua Corinthian, South Bay, Babylon, Bellport Bay and South Side Yacht Clubs. This association regulates the system of measurement for rating and time allowance, prescribes the rules for racing, and holds each season three or more association races open to members of these clubs.

The Bellport Bay Yacht Club has built its house on the bluff overlooking the beautiful Bellport Bay, and from its extensive verandas the whole course and bay may be seen. It has now fallen into line with the other clubs in starting a one-design class.



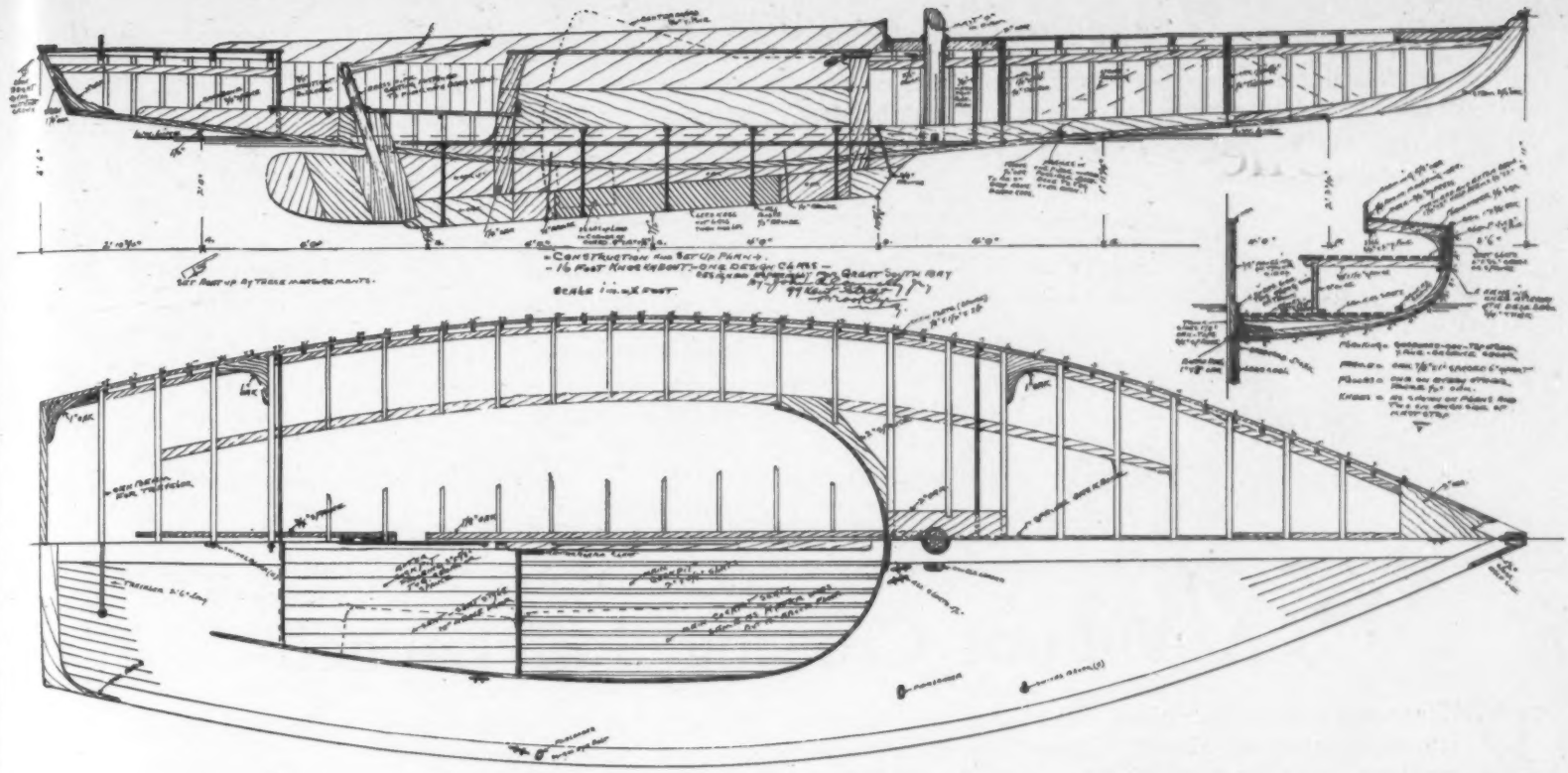
The club is now in the third year of its existence, and has an active membership of 135, 115 of whom are business men of New York and Brooklyn, who make their summer homes in the little town of Bellport, L. I.

The present officers, among whom are a number of owners of the new one-design boats, are: Commodore, Francis H. Holmes; vice-commodore, Alexander N. Cook; treasurer and secretary, Irving McElroy, Bellport. Trustees—C. A. Rich, C. Vose, T. A. Eddy, G. F. Droste, O. W. Robinson and W. Kraemer.

The Regatta Committee consists of J. R. Watkins, chairman; J. W. Overton, M. W. Goodwin, B. F. King, Dr. G. S. Soper, Dr. P. G. Becker.

Delegates to Great South Bay Yacht Racing Association are the Commodore, Isaac Snedeker and A. N. Cook.

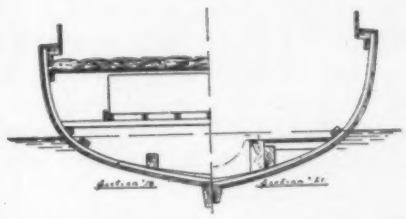
The schedule of races of the Great South Bay Yacht Racing Association for the coming season is as follows: July 5 at Bay Shore, July 24 at



Bellport, August 7 at Patchogue, and September 4 at Babylon. The delivery of these new one-design boats is to be at Bellport not later than June 15, and there will thus be ample opportunity to have them thoroughly tried out before the racing season opens.

A 26-Foot Open Launch

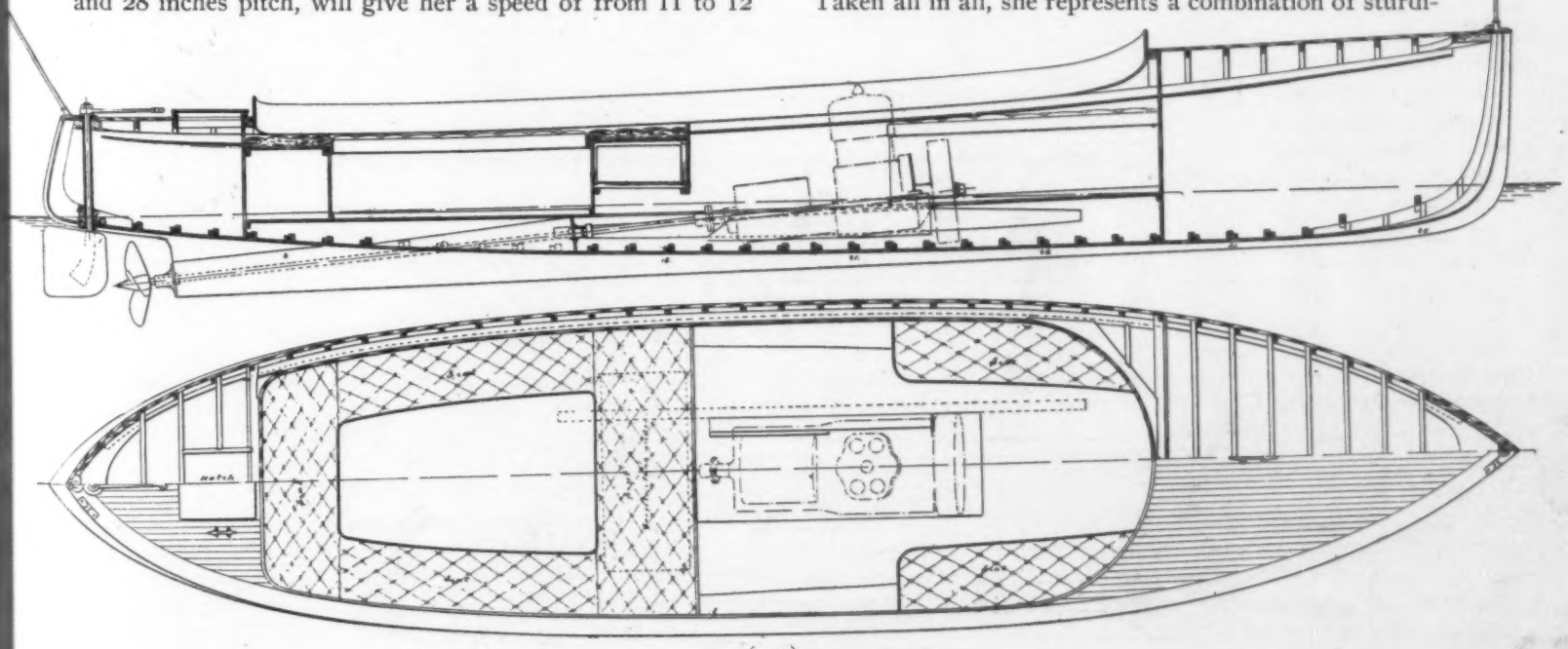
THE open 26-foot launch just designed by Cox & Stevens, New York City, for Oskar Tornroth, Esq., for use on Lake Nasijarvi near Tammersfors, Finland, is a particularly well-arranged craft, not only in regard to the placing of her heavy weights—both engine and fuel tank being well amidship—but in the general lay-out of her cockpit space.



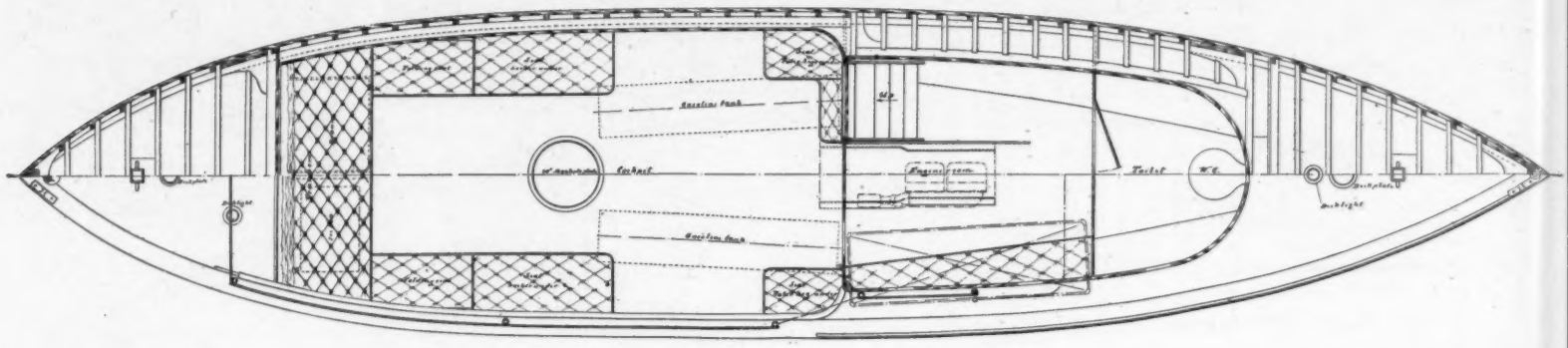
She is a compromise stern craft with a plumb bow, forward-raking stern post, and a well-rounded amidship section. She has seaworthy lines, and yet her under-water body is so well designed that her 15-horsepower Sterling engine, which turns a three-bladed wheel, 13 inches diameter and 28 inches pitch, will give her a speed of from 11 to 12 miles per hour. She is single-planked with ¾-inch yellow pine, has oak frames and keel, mahogany plank sheer and coaming.

The after portion of the cockpit has seats running entirely around it, the middle 'thwartship transom covering a gasolene tank of 30 gallons capacity. The forward portion of the cockpit contains motor, reverse gear and a pair of side seats, and is so arranged as to give plenty of room all around the engine. There is no skeg, and the rudder post is carried right up through the deck, so that tiller and steering gear are open and accessible. The hatch in the after deck gives entrance to an after storage space.

Taken all in all, she represents a combination of sturdi-



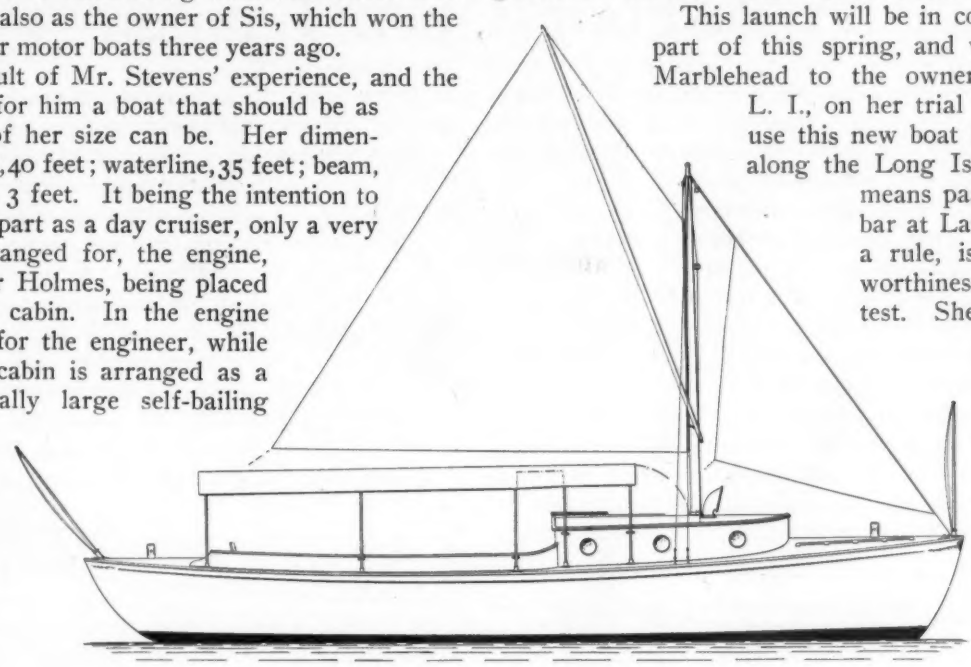
ness, capacity, and more than fair speed that should certainly prove attractive as a stock proposition for our American builders, as well as to those who want a launch of this type. Her dimensions are as follows: Length over all, 26 feet; length on waterline, 25 feet 10 inches; beam, 5 feet 11 inches; draft, 24 inches.



A 40-Foot Cruising Surf Launch

THE accompanying illustrations show a 40-foot gasolene launch designed by Messrs. Cox & Stevens and under construction at the yard of Messrs. Stearns & McKay, Marblehead, Mass., for Mr. Eben Stevens. Mr. Stevens has long been an enthusiast on the subject of motor boats, particularly those suitable for ocean work. He will be remembered as part owner and one of the crew of Ailsa Craig when that vessel won the race to Bermuda, and also as the owner of Sis, which won the Boston-New York race for motor boats three years ago.

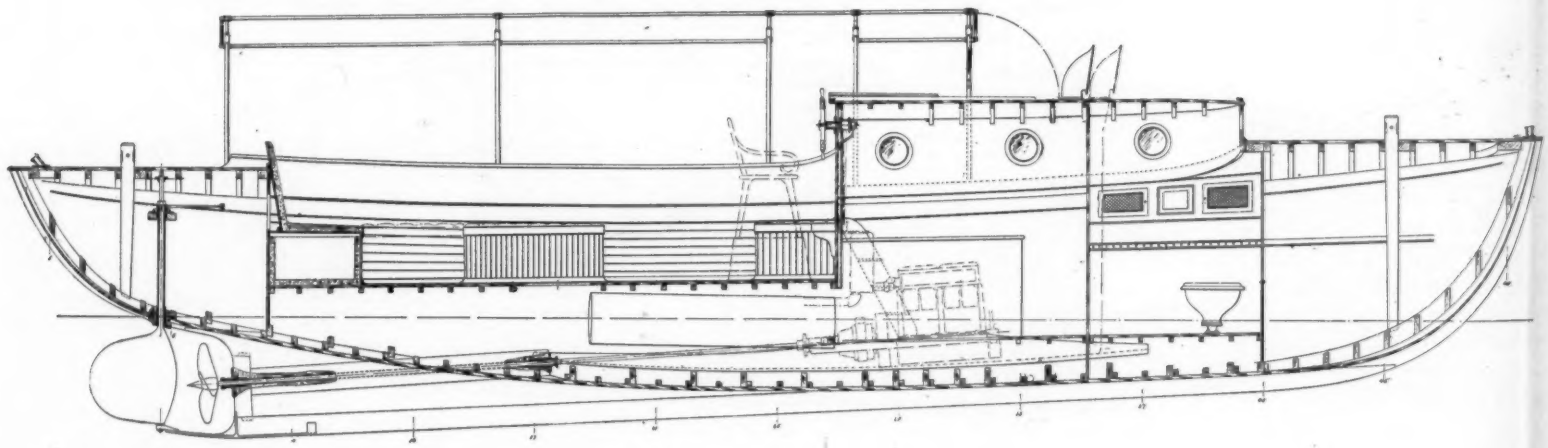
This new boat is a result of Mr. Stevens' experience, and the designers have prepared for him a boat that should be as seaworthy as any craft of her size can be. Her dimensions are: Length over all, 40 feet; waterline, 35 feet; beam, 8 feet 6 inches, and draft, 3 feet. It being the intention to use the boat for the most part as a day cruiser, only a very small cabin has been arranged for, the engine, which is a 25 horsepower Holmes, being placed at the after end of this cabin. In the engine room is fitted the berth for the engineer, while the forward end of the cabin is arranged as a toilet room. An unusually large self-bailing cockpit takes up the balance of the room in the boat. Over this cockpit is fitted a fixed canopy, such as is used in the navy launches, so arranged that when the side curtains are drawn down the cockpit can be used for sleeping purposes, and will then accommodate five people very comfortably.

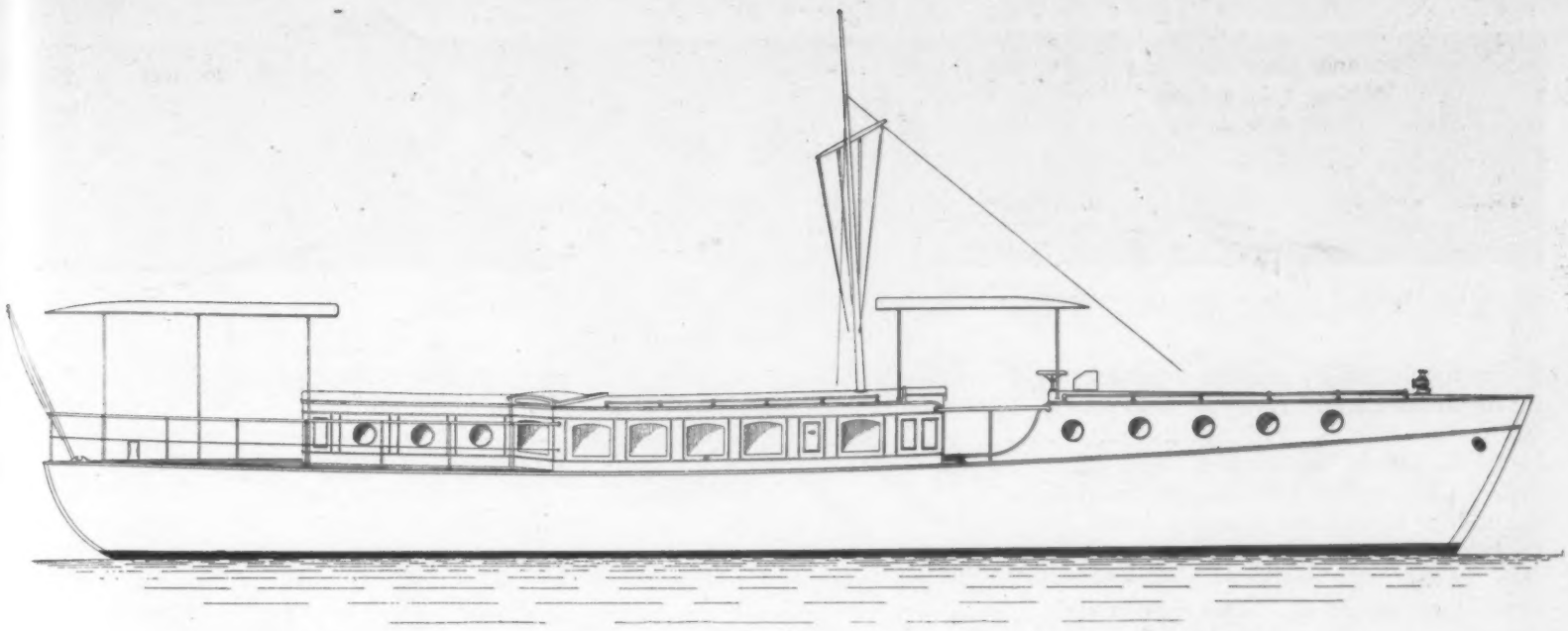


The engine control is from the forward end of cockpit, and, if need be, the boat can be run by the owner alone. At the after end of the cockpit is a seat extending across the boat, under which is fitted a large ice box, or refrigerator. A large supply of gasolene is carried in seamless steel tanks under the cockpit floor.

This launch will be in commission in the early part of this spring, and will make the run from Marblehead to the owner's home at Lawrence, L. I., on her trial trip. Mr. Stevens will use this new boat for cruising and fishing along the Long Island coast, and as this means passing in and out over a bar at Lawrence Inlet—which, as a rule, is very rough—her seaworthiness will have a very severe test. She is particularly well designed, and should prove a very comfortable boat for the service for which built.

The plans show her fitted with a small rig, consisting of spritsail and jib, to be used only in case of necessity. Where much outside work is done this is a good thing to carry.





A 56-Foot Power Cruiser

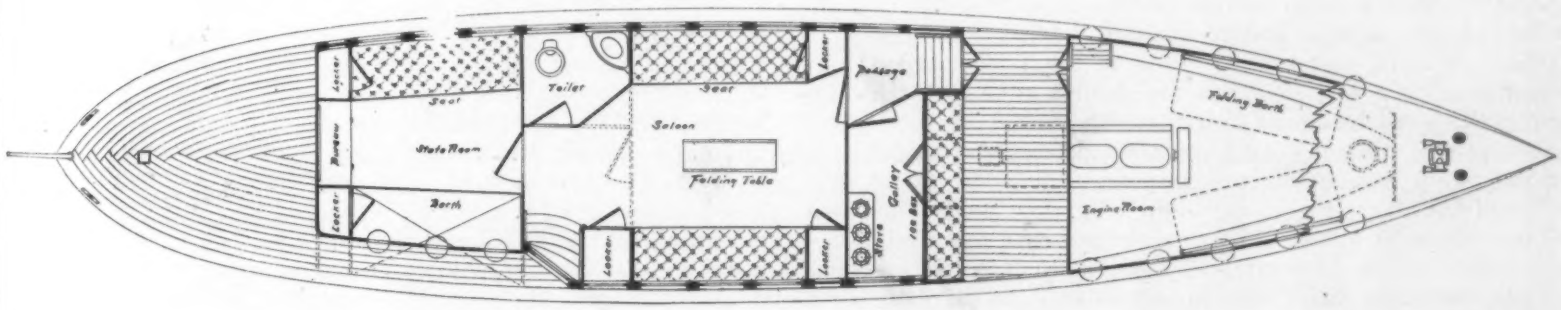
THE accompanying designs are those of an unusually well designed and roomy 56-foot, raised deck cruiser now under construction at the works of the New York Yacht, Launch & Engine Company, Morris Heights, New York City, for Mrs. Alice B. Witherill, of Philadelphia. The boat is 56 feet in length over all, with 11 feet beam and 3 feet 6 inches draft. She has a forward raised deck with an after trunk cabin brought well out to the sides, and a steering bridge between the two. At the stern is a 13-foot flush deck. The engine room and crew's quarters are forward under the raised deck, with the engine extending partly under the steering bridge and the reverse clutch brought to the wheel. The forward portion of the after deck house covers the galley, which is fitted with a three-hole vapor stove and a large ice box. A door in the port bulkhead of the galley leads into a passage which gives access to the bridge deck forward and to the saloon aft.

The saloon, which is 8 feet in length, extending the full width of the boat, has an extension seat on each side and a folding table in the center and two large lockers. Aft of the main saloon is a vestibule leading to the double stateroom aft. From the starboard side of this vestibule a companionway and steps lead to the side deck. The stateroom is 8 feet wide and 7 feet 6 inches in length, with an extension seat on the port side and a berth extending under the side deck on the starboard side. At its after end it has a large bureau with lockers on each side.

A cushioned transom seat runs almost entirely across the forward end of the after cabin trunk, converting the steersman's bridge into an observation deck, adding greatly to the attractiveness of the boat. There are folding berths in the forecastle engine room to accommodate a crew of four, and her four-cylinder, 30-horsepower, 20th Century engine is expected to give her a speed of 10½ miles per hour. The steering wheel, engine controls and reverse lever are all operated from the forward bridge, and her arrangement is such that the entire after end of the boat is reserved for the owner and guests.

The galley, situated between the saloon and the forecastle, allows the expeditious serving of hot meals to both owner and crew. She has ample deck accommodations for a large party when used as a day boat, and very comfortable quarters for the owner. By impressing the saloon into service as a stateroom, she will take care of two guests over night very comfortably.

There is a gasolene tank with a capacity of 340 gallons, giving the boat a cruising radius of 1,200 miles. Her water tanks, of 65 gallons capacity, are located under the seats in the stateroom, and her ice box will accommodate 170 pounds of ice. She is liberally supplied with locker space, and should prove a very comfortable cruising craft. A peculiarity of her design is the offset in the after cabin trunk, which allows of the side deck on the starboard side and the companionway in the middle of the house. The owner's room, which is located under this portion of the trunk, is lighted by three large plate-glass windows on the port side, and has three round port lights on the starboard side. The vestibule at the foot of the companionway is a feature which will be appreciated by all who have cruised in boats of this size or under.



EDITORIAL

Published by the Yachting Publishing Co.: Oswald Garrison Villard, President; Robert M. McBride, Secretary and Treasurer.

Harmony in the Motor Boat Camp After the brief period of uncertainty and doubt that followed the advent, last autumn, of the Automobile Club of America into the realm of motor boat affairs, the opposing forces for the control of the sport have agreed to bury their differences—real or imputed—and quash their suspicions. This was brought to pass a short time ago through the affiliation of the Automobile Club of America and the Motor Boat Club of America, with the Larchmont Yacht Club as a third party to the agreement. This is unqualifiedly the best thing for the good of the sport in this country that could have happened.

From the announcement now made it appears that the two clubs have amalgamated, the Automobile Club having taken over the Motor Boat Club as a part of its motor boat division, and admitting the members of the latter organization to the privileges accorded its own members of that division. The name of the Motor Boat Club will be retained, as will its officers, for the present at least. Each of the clubs will appoint two members to form the motor boat committee of the A. C. A., of which the president of the A. C. A. will be the ex-officio chairman. This committee will exercise all the powers necessary to the management of any international race run under the sanction of the International Association of Yachting-Automobile. In so far as the British International Cup (Harmsworth trophy) is concerned, this new agreement will be subject to the deed of gift and the conditions already approved by the British International Cup Commission, as well as to the arrangements that have already been made for the date and place of the race to be held this year. A special agreement with the Larchmont Yacht Club was also entered into whereby the Larchmont club-house on the Sound will be the out-of-town headquarters for the new organization, and in future we shall probably see the concentration of motor boat interests of these clubs in and about these waters.

Without going further into details of the amalgamation, it is unquestionably a wise step from the standpoint of all three clubs and in the best interests of motor boat racing. With the lack of harmony that could not but have resulted from the divided control of motor boat affairs, the interests of the game would have suffered and the sport become discredited. To become affiliated with a powerful and wealthy organization and the official representative of the International Association of Yachting-Automobile, the Motor Boat Club will gain much. On the other hand, the A. C. A., with a motor boat division that in point of strength and prestige had not counted for much, will be assured of a successful future by the accretion of a club with a membership the size of that of the M. B. C., and one that is the holder of the most important power boat cup in this country. By this move the A. C. A. will ultimately become the official head of the sport in this country and be so recognized abroad.

In accordance with the stand they have taken from the first, the A. C. A. will not undertake to exercise authority in any way over races of a purely national or local character, except through the co-operation of the M. B. C. of America or independent organizations.

For a Resumption of Racing With England In the letter from our English correspondent published last month, it was pointed out what, in his opinion, the ultimate position of American yachting would be if we confined our efforts to home racing and made no attempt to meet other nations in international events. An international yacht racing rule has been formulated and subscribed to by the various nations of Europe that foster yachting, which has already done much to bring boats of those nations together on the water. Without entering into the merits of this rule, and whether or not it would have suited our requirements to the extent that we should have been a party to it, would it not be well for us if some means could be found to bring about a resumption of yacht racing between England and America? We have recently found a way to meet Germany on the water, and also Spain, and the results of these meetings have been decidedly advantageous to the sport. Is there not some way in which this could be brought about with the Anglo-Saxon race across the pond?

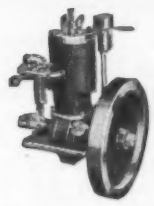
It seems improbable that America's Cup will do it. No one seems inclined to challenge with the trophy hedged about by the conditions that now obtain, and it is openly stated that no designer can be found—in England, at least—who will jeopardize his reputation by turning out a boat that will have to be built on the other side and meet the conditions to be found here. Outside of Sir Thomas Lipton's three challengers we have met with but four or five boats in the last fifteen years, and then boats of ours have crossed the Western Ocean to meet theirs. Barring the race for the Kaiser's Cup, British-owned boats have not raced on this side. The meetings have been so seldom that a certain distrust has been engendered, and the feeling has been frequently expressed on the other side that we cannot build boats under their scantling restrictions, or strong enough to cross the ocean, that could win. This last statement is not borne out by the facts, as, when we have come together, it has been our boats that have gone over there and not theirs that have come here; and, barring Vigilant, we have met with a fair measure of success.

But, eliminating the America's Cup, and letting it stand, as the N. Y. Y. C. seems inclined to do, for the emblem of simon-pure speed, regardless of restrictions, is there still no way to get the nations together on the water? I shall probably be reminded that there are numerous trophies of enough historic value to tempt the Britishers should they care to come over, and that their failure to come signifies that they do not care to, or are assured that they would have no show of success against the boats they would have to meet here. Of course, if we had the same measurement and scantling rules, the latter objection would not hold. If nothing less than an America's Cup will tempt them in the larger classes, where considerable outlay is necessary, can it not be managed in the smaller clases, as is now being done with Germany in the *Sonderklasse*, with the belief that the size of the boats will grow through the success of the meetings of these smaller craft? At any rate it ought to be tried. Cannot some representative American or British yacht club take the initiative in bringing about a resumption of racing between the two countries?

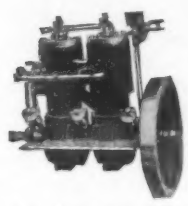
ELBRIDGE ENGINES

2-Cycle Marine for Speed Boat, Launch or Work Boat

1 to 8 Cylinders 3 to 160 H. P.



3, 6, 9 and 12 H. P.



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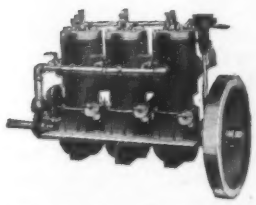
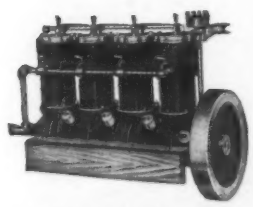
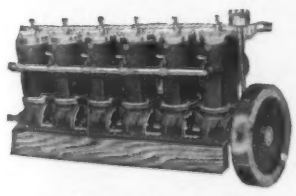


9, 18, 30, 36 H. P.



12, 24, 40, 60 H. P.



36, 60, 120 H. P.

IF you expect to have a properly constructed, well-tested motor delivered to you in time for the opening of the boating season, you should sit down and write your order at once.

The men who make gasolene engines are but men, they have none of the supernatural powers attributed to the classic deities, and they cannot do a week's work in less than three or four days' time. If you wait until a week before you are ready to use your engine your chances will be very good for disappointment. One of three things will happen: rather than lose your business some one will promise you delivery in three days and explain for a month why he is unable to ship; or, a hastily constructed, half tested rig will be shipped to you and the maker will try to make good later; or you will have to go without the engine you want and put up with what the next-best man is able to sell you.

Ten years ago it was so with the bicycle business. You waited until late in the season, and when your machine did not arrive you took what you could get. Perhaps you did the same thing last year with your automobile. Don't get left this year on your marine engine! Place your order now for an

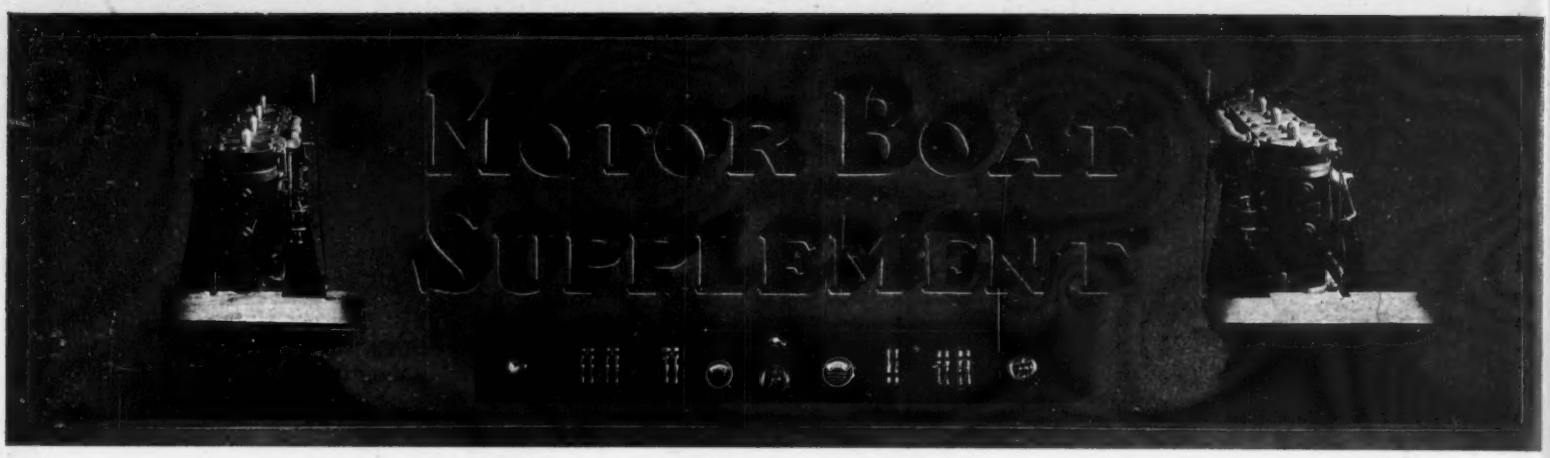
ELBRIDGE MARINE ENGINE

They represent more power for weight, greater fuel economy, more modern improvements than any other marine engines made. Every detail is refined and modernized. They are not ugly monstrosities to be concealed, but handsome additions to be exhibited with pride. Cost no more than many inferior engines to begin with, and they are far cheaper in the long run.

Not made by the thousand a year in advance and corded up like stove wood to wait for your money? but made one at a time by careful workmen for particular people who want the best. If you want an assured delivery place your order now. 3 to 160 H. P., 1 to 8 cylinders.

ELBRIDGE ENGINE CO.

22 CULVER ROAD, -:- -:- ROCHESTER, N. Y.

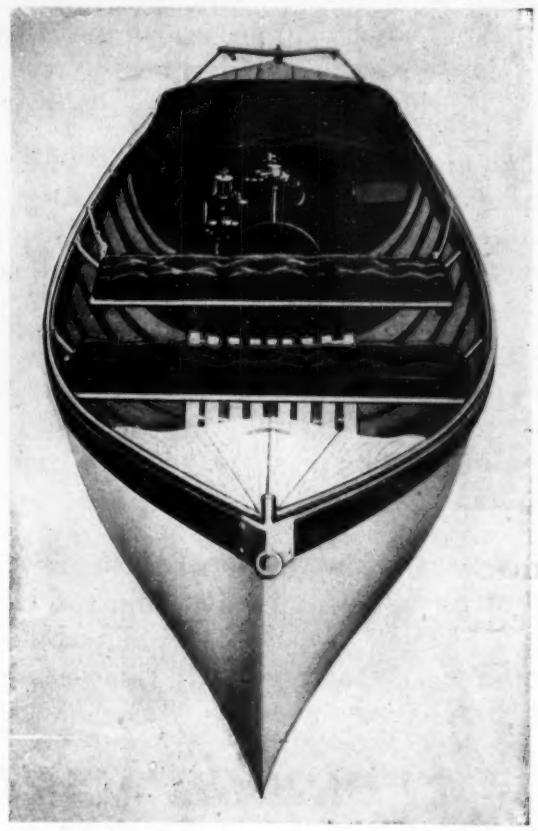


Good Times for the Purchaser of a Small Boat

The person who wants a small boat and a low-powered engine at a very moderate price is surely a favored individual this season. He is being catered to as he never has been before, and the amount of boat and accommodation which he can obtain at a merely nominal sum is calculated to make the small power craft a regular part of the furniture of every country place within walking distance of water over 6 inches deep.

The W. H. Mullins Company, of Salem, Ohio, did not stop when Whittelsey & Whitaker finished designing their larger craft, but they put these well-known naval architects at the task of designing hulls which would give the most satisfactory results in boats of 16 and 18 feet length over all. The results have certainly more than justified the trouble to which the Mullins Company went in the matter. Just how well they have succeeded will be realized from an examination of the illustrations herewith, showing a 16-foot by 50-inch beam open power boat, which is equipped with a 3-horsepower single-cylinder Ferro engine. Her greatest draft is but 12 inches, and she has a seating capacity of seven people in an 11-foot cockpit. Weighing but 400 pounds, she is an extremely easy craft to pull up under cover and stow securely at the end of a season, thereby adding to her value in the eyes of the summer cottager who does not want to lay awake winter nights worrying as to just what is happening to his boat.

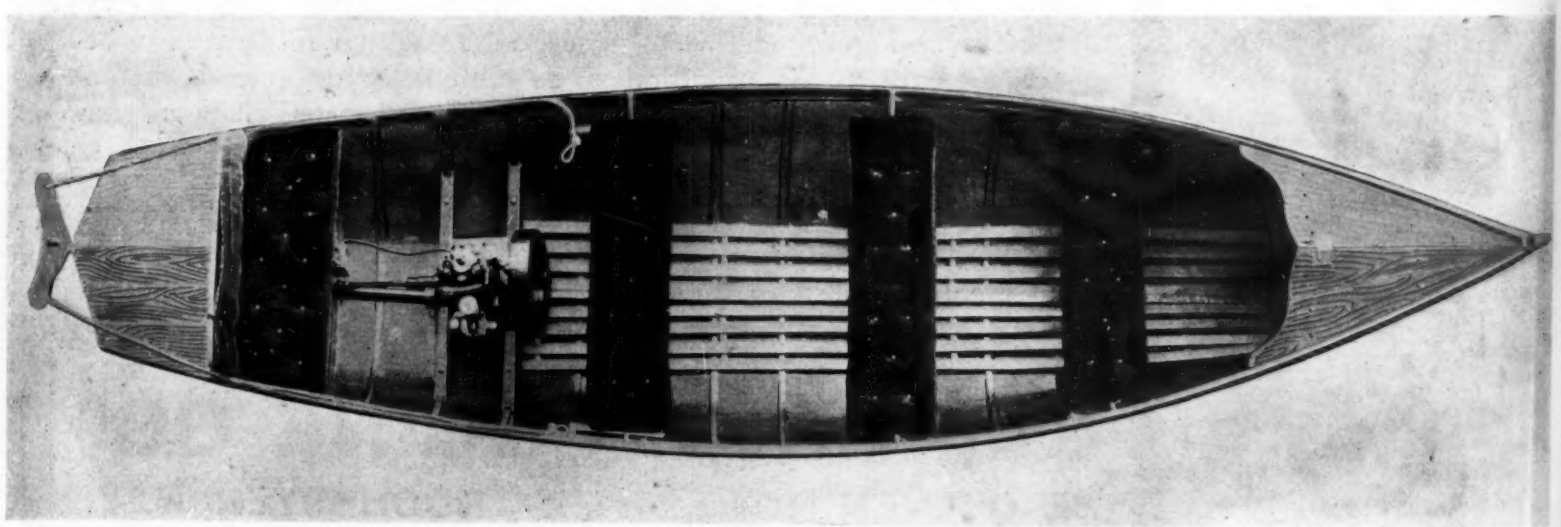
She is not a row-boat hull with an engine installed. On the contrary, she has a real power boat underbody, with a "V"-shape stern, and enough bearing aft to enable her to carry her engine and make the best speed of which she is capable without squatting. 'Thwartship seats are installed, as, in a craft of such moderate beam, these prove the most economical form of seating arrangement. Her engine is so located as to be easily handled by the occupant of the third 'thwart, from which the steering gear may also be operated. There is a 3-gallon galvanized steel gasolene tank, and large air chambers at both bow and stern are assurance against sinking, although she should be filled with water. Small as she is, she is equipped with a Mullins silent underwater exhaust, which makes her very quiet when underway. Taking her all in all, this little 16-footer is bound to be heard from before the summer is over, and in a way that will surely be satisfactory to her builders and designers.



Bow view of Mullins '09 model 16-footer, with 3-H. P. Ferro engine.

Another boat of a slightly larger type which will prove popular is the 18½-foot transom-stern runabout, designed and built from stock moulds by the Western Boat & Engine Company, of New York City. She is 18½ feet in length over all, 5 feet 3 inches beam, draws 18 feet of water, and will make, with a 3-horsepower Monarch engine, her regular equipment, a speed of 8½ miles an hour. A particularly comfortable and convenient arrangement of her cockpit is obtained by separating the forward engine space, by a substantial bulkhead, from the second or after cockpit, in which a 'thwartship stern lazy-back seat and chair space furnish accommodations for four passengers, and ladies and children may thus be isolated from the power equipment. Her forward cockpit is 9 feet and after cockpit 4 feet 9 inches in length, giving a total carrying capacity of ten people quite comfortably.

She is a remarkably pleasing and sturdy little craft, and, up to the capacity of her size and power, a good sea boat. If more spread is desired, a 5-horsepower engine could be installed, but to nine purchasers out of ten the 3-horsepower engine, which gives a most economical speed, will be found satisfactory.



Cockpit view of the Mullins steel boat, showing arrangement of seats, with engine so located as to be within easy reach of occupant of third seat, the one which would be occupied when only one person is aboard.

For a clear deck

with neither noise nor vibration

VAN AUKEN
TWIN SCREW MOTORS

¶ When we say "neither noise nor vibration" we mean it in the strongest terms.

¶ MOREOVER, our engines combine all the advantages of twin screw propulsion without the high initial cost of installing two engines or their subsequent extravagance of upkeep.

¶ The double reverse clutches enable you to start free of the load and to turn your boat in either direction within its own length. The small twin screws not only increase your speed but materially reduce your draught.

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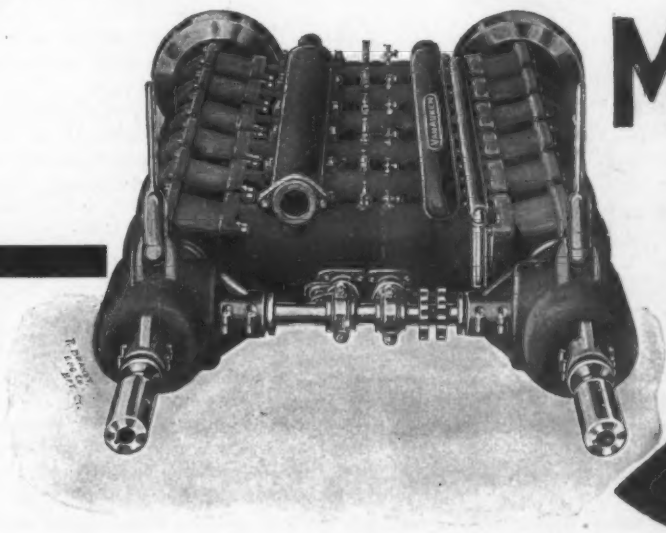


THE MODERN MOTOR

VAN AUKEN

A Catalogue that will Interest You A new marine catalogue, No. 51, has been issued by the Gleason-Peters Air Pump Company, of 255 Classon Avenue, Brooklyn, N. Y. From cover to cover the book is full of illustrations and descriptions of articles, such as whistles, air pumps, compressors and accessories, that will interest every boat owner. Among these a prominent place is given to the Caco line of whistles, of which the illustration herewith shows the No. 22 adjustable-lever chime pattern, which is claimed by the manufacturers to produce a deeper tone, although only 1½ inches in diameter, than that of a 2-inch whistle of any other make; in fact, among motor boat owners the Caco No. 22 has long been known as "the little whistle with the big noise."

The illustrated catalogue will be sent free to any of our readers who write the Gleason-Peters Company, stating that they saw their announcement in YACHTING.

No. 22 Caco adjustable-lever chime whistle.

For the Angling Boat Owner The fisherman who owns a boat, either sail or power, has better opportunities not only for discovering the choice spots where the finny tribes congregate, but for reaching them more quickly and pleasantly than by any other method of transportation.

That's why so many boat owners are fishermen; and because they are fishermen the booklet published by Messrs. Jas. Heddon & Son, of Dowagiac, Mich., will interest them. Not because it is one of the handsomest bits of angling literature that has come out in a long while, but by reason of the thorough manner in which it covers the art of bait casting. Only an expert in practice as well as in theory, such as Mr. Heddon, could have produced a treatise as thoroughly practical as this, and it is worthy of the attention of every follower of the splendid sport of bait casting.

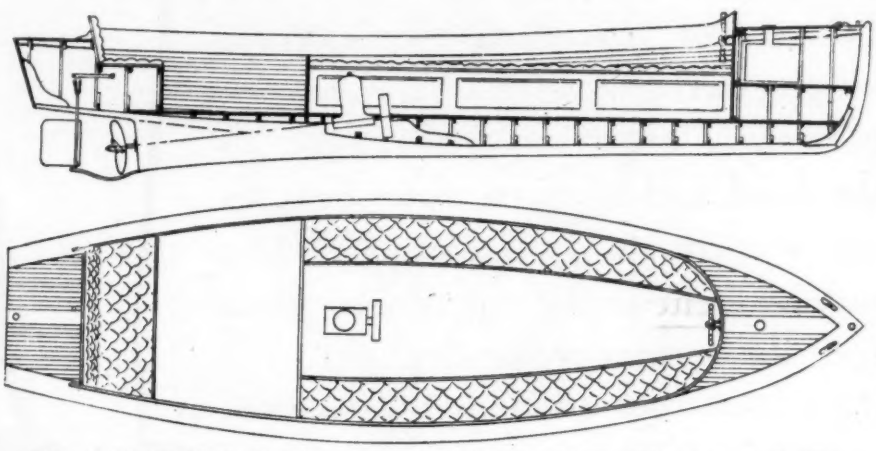
It will be mailed free to every reader of YACHTING who writes Mr. Heddon at the above address and states specifically that he saw the book mentioned in this department.

Don't Let the Inspector Catch You Napping "The inspector will get you if you don't watch out." This is the text of a sermon just issued by the Porter Company, of 194 Water Street, New York City.

The inspection of motor boats during the coming season will undoubtedly be more thorough and critical than at any previous time in the history of the sport, and there are so many skippers who are in doubt as to just what does and does not fill the government requirements for motor craft of various sizes that this booklet will be a practical help to those who are about to purchase signal lights for the coming year. The booklet is free to our readers who will mention YACHTING in sending for it.

Incidentally, the Porter Company have just brought out two new patterns of sailing lights, particularly adapted both in size and price for use on small and medium-sized craft. These patterns, which are named, respectively, the Midget and the Dwarf, are well made, very compact, and are, moreover, furnished with oil fonts of exceedingly generous size, which insures their burning longer than could be possibly needed during anything but the night of an Arctic winter.

Their bow lights comply with the government regulations calling for an arc of 225 degrees for the glass portion of the lantern.



Plan of Western Boat & Engine Company's 18½-foot runabout, which has a particularly well-arranged cockpit.

"Midget" anchor light and "Dwarf" side light manufactured by the Porter Company.

Tools for the Motor Boat Owner If there is any man whose requirements call for accurate, durable and well-finished tools, it is the owner of a motor boat. One can do a whole lot of patched-up work around the house, erect a chicken coop, or nail down a packing case cover with some of the choice varieties of hardware that are handed out at the 5 and 10-cent store, but when it comes to outfitting, repairing or making alterations on hull or equipment of a boat, a screwdriver that won't break or slip, a brace that will hold the bitt true and tight, a wrench that will hold firmly, and a drill that won't bend are a few of the requirements in the way of tools with which one can take no chances. Appreciating this fact, Montgomery & Company, of 105 Fulton Street, New York City, have issued a 300-page book, entitled "The Tool Monger," containing an illustrated description and price list of an assortment of tools particularly adapted to the skipper's kit and the boat-house work room. This book should be in every club reading room and boat owner's locker, as a reference to it will save a lot of time, trouble and general scouring around when in doubt as to the proper outfit for any particular job. It will be sent free to every reader of YACHTING writing Messrs. Montgomery & Company.

A Valuable Handbook of Information A 52-page booklet has just been issued by the Gray Motor Company, of Detroit, Mich., covering the care and operation of their motors. Aside from the information which it contains in regard to Gray motors, it is so full of valuable points, hints and suggestions in regard to the operation of engines and the installation of motors, tanks and ignition systems that it will be found well worth the perusal of every motor boat owner. It will be mailed by the Gray Motor Company, post paid, on receipt of 10 cents.

A Boon to the Single-Handed Skipper To the man who wishes to be engineer, pilot, mate and lookout on his motor boat, the Roper Safety Propeller will appeal with a great deal of force, and the more he considers the proposition the better he will like it. By the simple expedient of installing two sets of blades, tandem, the load on the engine always remains the same, no matter what angle the blades present to the water, or how fast or how slowly they drive the boat forward or astern, or whether, indeed, they be set at the neutral point, allowing the boat to lay motionless. There is, therefore, absolutely no need of throttling down the engine to prevent its racing.

By means of a controlling lever in the bow, the man at the wheel may, without touching the throttle or spark control, speed his boat ahead, slow her down, reverse or stop her. It is not necessary that this control be placed at the bow; it may be installed where it will be in reach of the engineer or at any other part of the boat. Just a simple throw of the control lever gives the boat any speed desired, from barely headway up to the full capability of her engine and lines.

It isn't always convenient to have a set of throttle and spark control at the steersman's position, particularly on small boats. With the Roper Safety Propeller this is unnecessary, and once set at the proper adjustment, and the engine started, they may be left untouched and every variation of speed desired obtained by means of the propeller.

Although safety and convenience were the two points sought by the inventor, the actual usage of the Roper during the past couple of seasons has demonstrated that with it the speed of boats in which it has been installed has, without change of engine, been increased by as much as a mile per hour.

The manufacturers, Messrs. C. F. Roper & Company, of Hopedale, Mass., have issued a handsomely illustrated booklet explaining the operation of the propeller and the advantages which it offers, and this booklet will appeal strongly to those about to purchase a new boat or put an older craft in commission. It will be sent without charge on request.

The Old Gives Place to the New The old-fashioned striped awning, or standing roof, is seldom seen nowadays on up-to-date power boats. Its abandonment is due, in no small degree, to the comfort and convenience of the more seaworthy spray hood with which the progressive skipper now provides himself. One of the chief beauties of the spray hood lies in the fact that it is right there when you want it, and when not in use is the most unobtrusive part of the boat's equipment. Even when set up it is low and compact, presenting very little surface to the wind. At the same time it is absolutely dry, and will turn a heavy down-pour of rain, or let the boat

DON'T PAINT YOUR BOAT—ENAMEL IT

WITH

THE FINEST FINISH FOR A FINE YACHT

Enamolin

IT WEARS FOUR TIMES AS LONG AS ANY PAINT

A pure, white enamel that dries out with a brilliant gloss, showing no brush marks, and closely resembling porcelain. *It never checks, cracks, peels, or flakes.* When soiled it may be *scrubbed* with soap and water, without injury. *It will not discolor at the water line from lying in dirty waters.* Enamolin may be applied over the old paint without scraping or burning off. Enamolin is also made in Flat White, Gloss Black, Flat Black and colors. One gallon covers about 600 square feet and is sufficient to finish the average yacht.

Price, $5 per gallon.

One-Half Gallon Cans, $2.60 each; One-Quarter Gallon Cans, $1.35 each; One-Eighth Gallon Cans, 75 cents each.
For sale at all Ship-chandlers, or may be had direct from the factory.
We prepay the expressage on one gallon or over.

A couple of unsolicited testimonials

CHAS. A. STARBUCK, Commodore
Steam Yacht "CARMEN"
GEORGE B. BRANDON, Secretary
74 William Street
Telephone 3430 John

COLUMBIA YACHT CLUB
Eighty-Sixth Street
Hudson River
New York
Telephone 4140 Riverside

Nov. 14, 1908.

Messrs. Emil Calman & Co.
100 William St., City.

Dear Sirs:-

It is with great pleasure that I send you this unsolicited testimonial.

I used your Enamolin on my yacht "Wateree", and am pleased to say that it made good in every sense that you said it would. I was particularly impressed with the ease in which it can be applied and the beautiful gloss after drying, showing no brush marks. My headquarters this summer were at the Larchmont Yacht Club, New York, and if I heard one, I heard dozens remark the whiteness of my boat, compared to much more expensive and larger boats as well as smaller. I will not have to paint it next summer, from the appearance of the paint now. Heretofore I have had to paint it every year.

Yours very truly,

B/MEC

J. W. Brander.

COLUMBIA YACHT CLUB
CHICAGO

Commodore's Office

Chicago Sept. 26th 1908.

Emil Calman & Co
Gentlemen:

I have heard so much of your Blue Label Enamolin that I had Jones of La Borde of Oak Park Mich. use some on the "Columbia" the Columbia Yacht Club's defender in the recent cup races — and do not regret it.

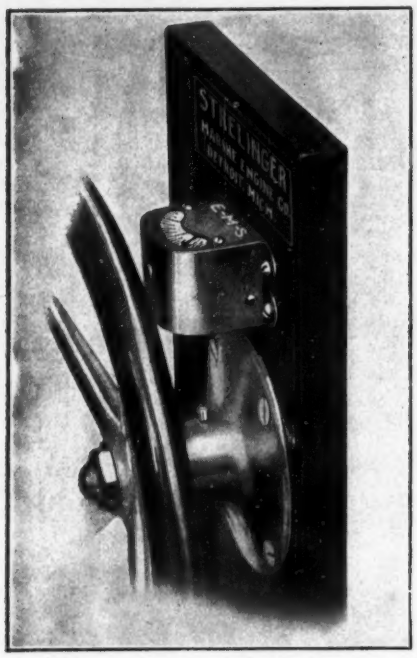
Considering the wear and tear, the Boat had during the season I am well satisfied that the Enamolin is all right.

Sometime ago some scows loaded with refuse from a Gas Company dumped many loads into the Lake just outside the harbor of the Chicago Yacht Club and the wind would blow the oily waves into the basins that have painted the White sides of the yachts with Green Purple and Brown splotches - and while a great many boats were ruined, it did not effect the Enamolin, as we easily washed it off.

Yours Truly.
J. F. McGuire
(J. F. McGuire) Commodore Columbia yacht club

EMIL CALMAN & CO., 100 William St., New York

plow into a head sea without the crew absorbing a bit of moisture. When not needed it may be slid forward and dropped on deck. With the front and sides raised, it is a comfortable and ship-shape awning, giving protection against the sun on a hot day, and when fitted with rear curtains it will convert an open launch into a very comfortable summer-cabin cruiser. In fact, two hoods, back to back, of sufficient size, with the addition of a flap curtain between them, will cover the entire cockpit, and give very commodious sleeping accommodations when desired.



E. M. S. Rudder Indicator mounted on bulkhead in front of steering wheel.

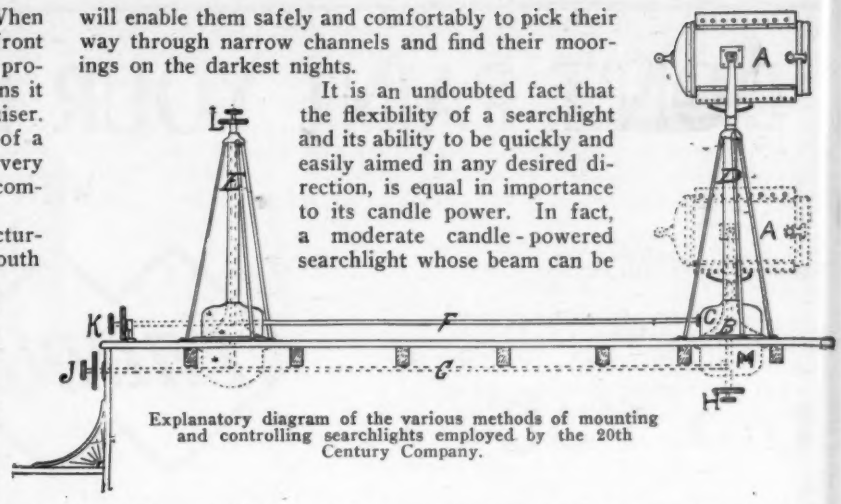
The Pneumatic Manufacturing Company, of 2-B South Street, New York City, have issued an illustrated catalogue of their 1909 spray-hood models, showing the various sizes and styles, and with diagrams illustrating how they may be converted into awnings and cabins. Their stock hoods are all made from the best grade of 8-ounce duck or khaki, and they may be made to order of 10-ounce weight in either material. All metal fittings are of brass. The catalogue will be mailed by the Pneumatic Company on request; or they will, upon receipt of information regarding the length and width of cockpit to be covered, estimate on any particular type of hood required.

For Keeping Tabs on the Rudder Did you ever wonder just exactly what the rudder was doing and just what position it was in, particularly at night? If you ever have experienced this sensation, the E. M. S. Rudder Indicator built by the Strelinger Marine Engine Company, of 53 Congress Street, East, Detroit, Mich., will interest you. The indicator is handsomely made; bronze box attached direct to the steering wheel, and with an indicator dial showing the exact position of the rudder at any time. It is a tell-tale whereby the position of the rudder may be readily noted at night without the use of light in the wheel-house, which would momentarily blind the helmsman and interfere with his observation of an approaching object.

In the top of the indicator box is a slit in the shape of an arc of a circle, under which, protected by a glass shield, a pointer swings from port to starboard and vice versa. This indicator swings with the rudder, allowing the position of the latter to be seen instantly, and, by the graduated scale over which it moves, indicating how many points to port or starboard the rudder itself has swung.

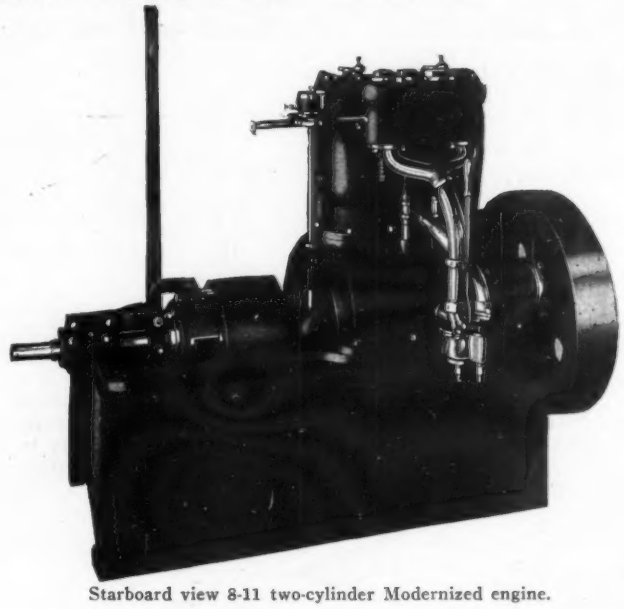
At night the scale remains dark if the rudder is amidship. If swung to port the scale glows with a red light, and if to starboard it shows green. This light, while in no way interfering with or obscuring the wheelman's vision, is strong enough and so situated as to show up the graduated scale and the pointer quite plainly.

New Type of Searchlight Bases and Pedestals Year by year more attention is given by boat owners, not only to the details of interior lighting, but in regard to searchlight systems which will enable them safely and comfortably to pick their way through narrow channels and find their moorings on the darkest nights.



Explanatory diagram of the various methods of mounting and controlling searchlights employed by the 20th Century Company.

It is an undoubted fact that the flexibility of a searchlight and its ability to be quickly and easily aimed in any desired direction, is equal in importance to its candle power. In fact, a moderate candle-powered searchlight whose beam can be instantly controlled is apt to prove, in many cases, a more practical outfit than a higher powered illuminator less easy to direct. Working on this theory, the Twentieth Century Manufacturing Company, of 19 Warren Street, New York City, one of the oldest manufacturers of acetylene lighting systems, have recently designed and are now placing on the market a line of pedestals and bases for their acetylene searchlights which differs radically from anything heretofore manufactured.



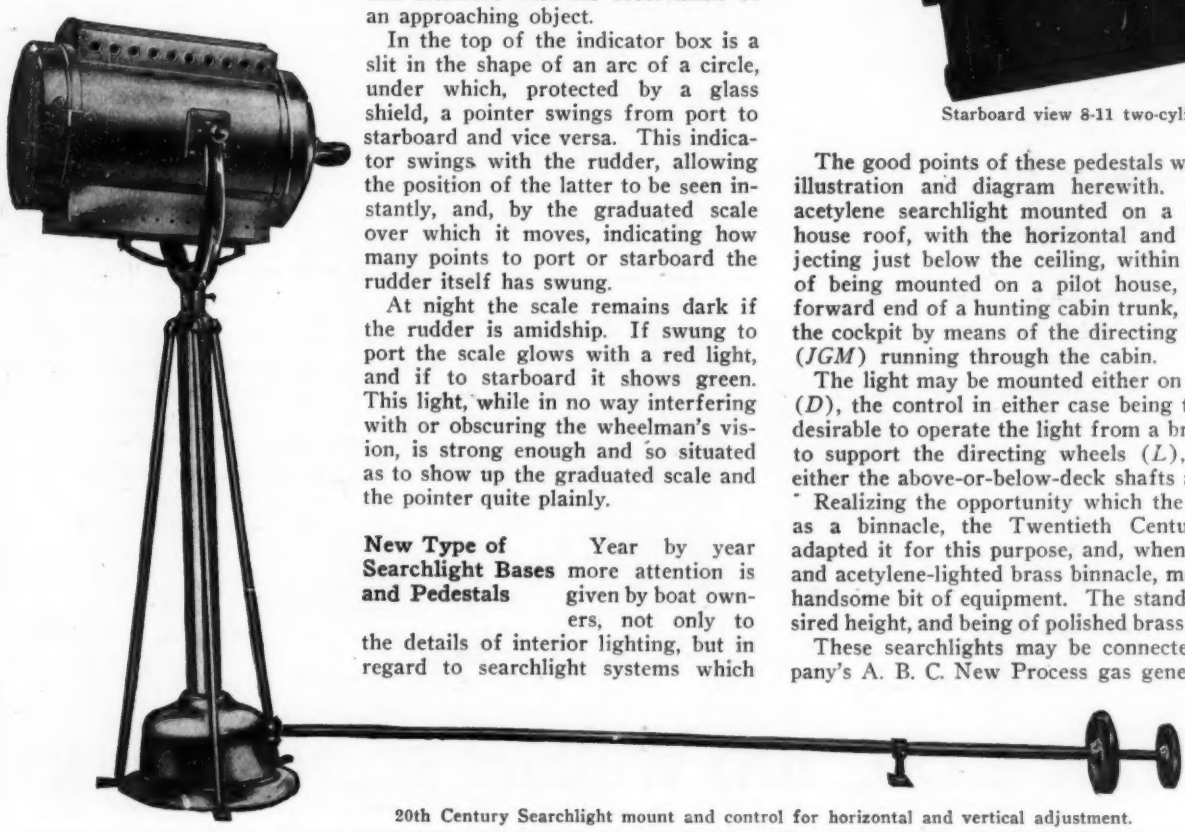
Starboard view 8-11 two-cylinder Modernized engine.

The good points of these pedestals will be understood by reference to the illustration and diagram herewith. In the diagram, *A* represents an acetylene searchlight mounted on a low standard directly on the pilot house roof, with the horizontal and vertical-directing wheels (*H*) projecting just below the ceiling, within the reach of the pilot. If, instead of being mounted on a pilot house, the lamp is to be mounted at the forward end of a hunting cabin trunk, its direction may be controlled from the cockpit by means of the directing rods (*KFC*), running outside or by (*JGM*) running through the cabin.

The light may be mounted either on a low base (*B*) or on the high base (*D*), the control in either case being the same. In the event of its being desirable to operate the light from a bridge, the standard (*E*) may be used to support the directing wheels (*L*), and this standard connected with either the above-or-below-deck shafts as desired.

Realizing the opportunity which the standard (*E*) offers for utilization as a binnacle, the Twentieth Century Manufacturing Company have adapted it for this purpose, and, when desired, will equip it with compass and acetylene-lighted brass binnacle, making a very compact and extremely handsome bit of equipment. The stands (*D*) and (*E*) are made of any desired height, and being of polished brass are as ornamental as they are useful.

These searchlights may be connected to the Twentieth Century Company's A. B. C. New Process gas generator for lighting and cooking purposes, described in a previous issue of YACHTING, or to one of their portable generators of a 3-pound carbide capacity, which will provide adequately for a searchlight alone.



20th Century Searchlight mount and control for horizontal and vertical adjustment.

Deck Type KLAXON
Price, $37.50

THE

KLAXON

(TRADE MARK REG. PAT. MARCH 31,1908 OTHER PATENTS PENDING

"The X Ray of Sound"

APPROVED BY DEPARTMENT OF COMMERCE AND LABOR

Pilot House Type KLAXON
Price, $38.00

DID YOU—

slice off a portion of your bank account last season and invest in a signal system, which an inspector, subsequently told you "didn't go"?

Then, the following endorsement of the Klaxons by the Department of Commerce and Labor—the first and only official endorsement ever given to an electrically operated signal—will interest you.

DEPARTMENT OF COMMERCE AND LABOR
Steamboat-Inspection Service

THE KLAXON CO., WASHINGTON, April 2, 1909.
Mr. Miller Reese Hutchinson, 1 Madison Ave., New York, N. Y.

SIRS:—In further reference to your letter of the 12th ultimo you are hereby informed that the Klaxon warning signal (electric and hand-actuated), approved by the Board of Supervising Inspectors, on February 19, 1909, was approved by the Secretary of Commerce and Labor, on March 20, 1909, for use on motor vessels, under the provisions of section 4491, Revised Statutes of the United States.

Respectfully,
(Signed) GEO UHLER,
Supervising Inspector-General.
N

The KLAXON contains a real electric motor which, when attached to a 6 or 8-cell dry battery or a 6 to 8-volt storage battery vibrates a steel disk (by means of a ten-tooth rotor attached to the motor shaft) at the rate of 30,000 vibrations per minute, and produces a sound which cuts through fog like a knife, and secures instant recognition, no matter how many other boats in your vicinity are signalling at the same time.

It is absolutely water proof—in fact, it can be operated under water, and no amount of moisture has any effect upon it.

A 16-foot open power boat equipped with one of these will make as much noise as an ocean-going tug.

The sound from the Klaxon cuts straight ahead, and receives the attention of the boat signalled without splitting the ear drums of those aboard the boat on which it is operated.

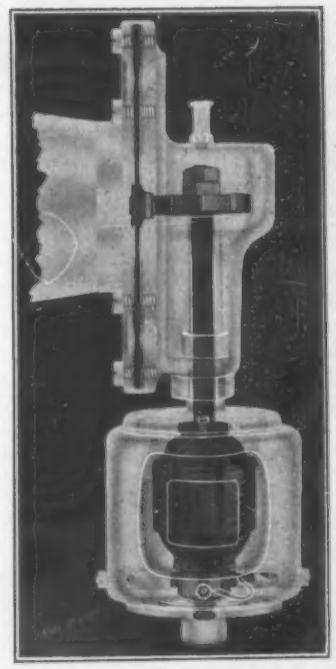
The Hand Klaxon has the same noise making qualities as the Klaxon, and is operated on the same acoustic principle. Instead of an electric motor, a crank turned by hand revolves a large gear wheel, which meshes with a tooth pinion on the base of the rotor shaft.

Although a child of five can operate it, it is geared so high that an eighth-inch movement of the handle starts it off on a full toned bass roar—no loss of time in getting up to its full volume of sound.

A single, double or triple blast or a prolonged note may be produced at will of the operator.

It is adapted to use on board either motor or sail boats, and is the only signal which can be operated to advantage on the average sailing craft.

It is the first satisfactory signal which has ever been offered to the fisherman, and is so strongly and substantially built that, like the Klaxon, it will last for a lifetime. It may be installed anywhere, and half a turn of the set screw allows its being swiveled in any direction. Two turns of the same screw allows it to be removed from the base for storage in boat house, cabin or locker.



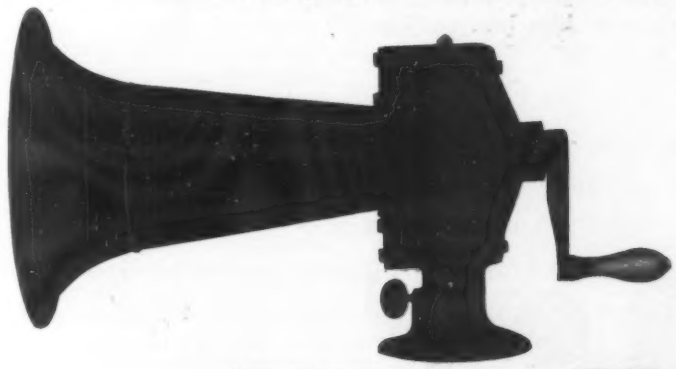
Sectional view of KLAXON, showing relative position of motor shaft, toothed wheel and vibrating diaphragm.

SEND FOR BOOKLET

Manufactured by

LOVELL McCONNELL MFG. CO.

369-371 Market St., Newark, N. J.



HAND KLAXON. Price $15.00

Sole Distributers

THE KLAXON COMPANY

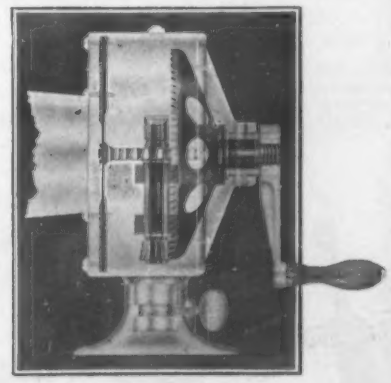
3 Madison Ave., New York City

THE

HAND KLAXON

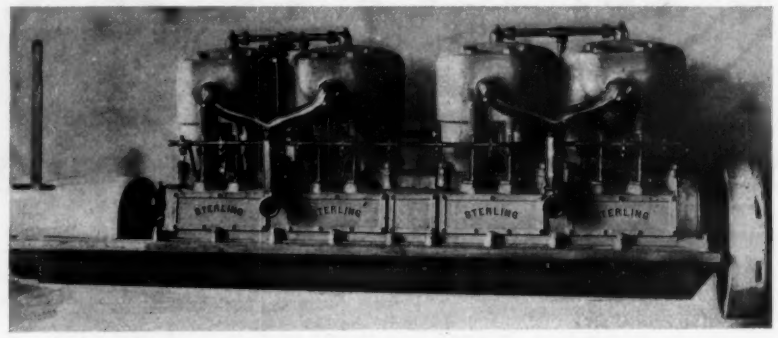
(TRADE MARK REG. PAT. MARCH 31,1908 OTHER PATENTS PENDING

"The X Ray of Sound"



Ghost Picture of HAND KLAXON, Showing Simplicity of Mechanism.

A Marine Engine of Quality The 1909 Modernized marine engine manufactured by Breed & De Blois, of 1876 Broadway, New York City (the Motor Mart Building), is built for the man who wants the best, and realizes that a thoroughly satisfactory engine, accurately finished and honestly made, must necessarily cost more to produce than a less finely finished product. It is to the man who has had experience with marine engines that the Modernized most strongly appeals, and its makers claim that the more a man knows about gasolene motors the more he will appreciate the good points of their output.



The eight-cylinder, 100-H. P. Sterling engine, with which the Courier made over 27 miles per hour.

It is claimed for this engine that it contains the fewest working parts of any four-cycle machine built. All parts are accessible, and adjustments may be made without taking the engine apart. The cylinders are cast in pairs with removable heads. Heads and cylinders at joints have solid faces, the circulating water passing from the cylinder into the cylinder head through a by-pass, carried around the intersection of joints. This gives the immunity from water leakage of the solid head, and at the same time allows the withdrawal of the piston without dismantling the entire engine. It also allows access to the water-jacket through several threaded holes, for the purpose of removing deposits which may accumulate after a few seasons' use.

The water-jackets, extending over the whole path of piston travel and surrounding the valve seats, insures uniform expansion, and, therefore, permanently tight valves. The circulating water first enters the engine's water-jacket at the warmest part, and is then forced by the circulating pump to the next warmest part, and, in turn, to the lesser, or cooler parts. The object is to so circulate the water as to secure an even temperature over the engine's entire surface surrounded by the water-jacket.

The water, after properly performing the duties for which it is intended, is led into the exhaust manifold, after which it is conducted to the exhaust pipe proper at a lower point than the exhaust outlet from the manifold. The necessity of having an even temperature in a gasolene engine is of vital importance, for the reason that the unequal expansion and contraction of the metal would be injurious, and in some parts of the engine disastrous, especially in locations where it is necessary to have absolutely tight joints. The capacity of the exhaust piping in every case must be double, or at least one-quarter larger, in diameter, than the openings from the exhaust expansion chamber of engine. Drain taps are fitted at the low points for removal during freezing weather.

Among other important features is the water-cooled expansion chamber, situated between the cylinders in each pair, thus forming a reservoir four times the volume of both the exhaust valves, and running diagonally downward between the two cylinders and opening out near the bottom of the cylinders on the opposite side, thus absolutely doing away with back pressure, unnecessary noise and the usual jar or vibration; it also admits of the cylinders and exhaust pipe being kept at an even temperature. The exhaust pipe being placed at the bottom of the cylinders, out of the way of the passengers, admits of its being easily piped to the atmosphere.

A Combination Awning and Boat Cover The R. L. Kenyon Company, of La Crosse, Wis., whose reputation for furnishing high-grade boat tops and life preserver cushions is known throughout the country, make the announcement that they have added to their celebrated line of folding boat tops a top specially designed for heavy service on boats which carry passengers for fishing, or for any other craft which requires the best of protection in all kinds of weather. This top is made very strong, after the well-known Kenyon designs, and is covered with 10-ounce army duck, specially treated with the preserve compound in use by the United States government for water-proofing and preserving of heavy cotton fabric. This top bids fair to be one of the heaviest sellers in the Kenyon line, and is specially adapted for boats where it is used for protection. It is guaranteed by the manufacturers to be absolutely water-proof, to stand up under the heaviest test, and to give entire satisfaction for long and hard service. Its price will be exceptionally reasonable as compared with anything of the kind ever placed on the market, and as the reputation of the R. L. Kenyon Company for turning out goods exactly as represented is known everywhere, prospective builders will not hesitate to order at once.

An attractive circular describing this top and their new summer top will be mailed free to anyone addressing the R. L. Kenyon Company, La Crosse, Wis.

A Remarkable Performance The record made by the Courier at Palm Beach on March 19 has been the talk of motor boat enthusiasts from coast to coast. Certainly, the event in which the Courier won the championship of America for long distances was spectacular enough to provoke talk for some time to come, and such a glorious victory will not soon be forgotten.

For a motor boat to cover 103 miles at an average speed of 27 miles an hour, making 20 laps and 80 turns, is certainly a demonstration of the staying qualities of her engine. But the builders of the Courier's engine have other reasons for congratulation, in that they also built the engine of the Messenger, which was second in the same race, in which there were twelve boats, and only three finished. There were only two Sterling engines entered, and they finished first and second; the Courier equipped with an eight-cylinder, 100-horsepower Sterling and the Messenger equipped with a 25-40-horsepower Sterling. It would indeed be hard to demonstrate more thoroughly and conclusively the reliability and endurance of a marine engine than was shown in the recent event at Palm Beach.

We are reproducing a photograph of the eight-cylinder, 100-horsepower Sterling engine which is the power plant of the Courier. Any one looking at the cut would pronounce this engine to be just what it has proved itself to be—a winner. Compact and symmetrical, this engine is pleasing to look upon, while it conveys to the mind of the beholder the impression of great sturdiness and power—an engine built for business. Sterling engines have won such an enviable reputation as trophy winners in long and short-distance races that it seems desirable to note here a few of the important features of Sterling construction.

Both the inlet and exhaust connections are removed by loosening four bolts. The water connection on the top of the engine is also fastened with only four bolts. The elimination of parts and simplicity of construction are special Sterling features. The oiling system is automatic. The lower base of the engine has partitions that stand about 2 inches high, dividing each connecting rod. At the rear of the engine there is a rotary pump. From this pump there is a tube running down into an oil pit in the lower base. When the engine starts the oil is taken by this pump from the oil pit up into the feed pipe, and through this feed pipe to a relief pipe. In this relief pipe there is a small check valve. This check valve holds a pressure on the main feed pipe. The oil is then carried through the sight feeds, running a full stream of oil into the bearings. The crank shaft is hollow bored, and the oil is carried from the main bearings through the crank shaft to the connecting rod bearings, thus insuring positive lubrication of the connecting rods. Partitions in the lower base are just high enough to allow of slight splash lubrication. There is a steady stream of oil carried to the bearings while the engine is running. The surplus of oil from this feed bar is carried through the relief pipe at the front of the engine and then flows on to the front gears into the lower base, flowing over the different partitions to the oil pit at the rear, where the oil is pumped over again. The cylinders are supplied with oil through the forced sight-feed oil reservoir, located between the fourth and fifth cylinders.

Tiebout's new air compressor (patent applied for), attached to propeller shaft and connected to pressure tank.

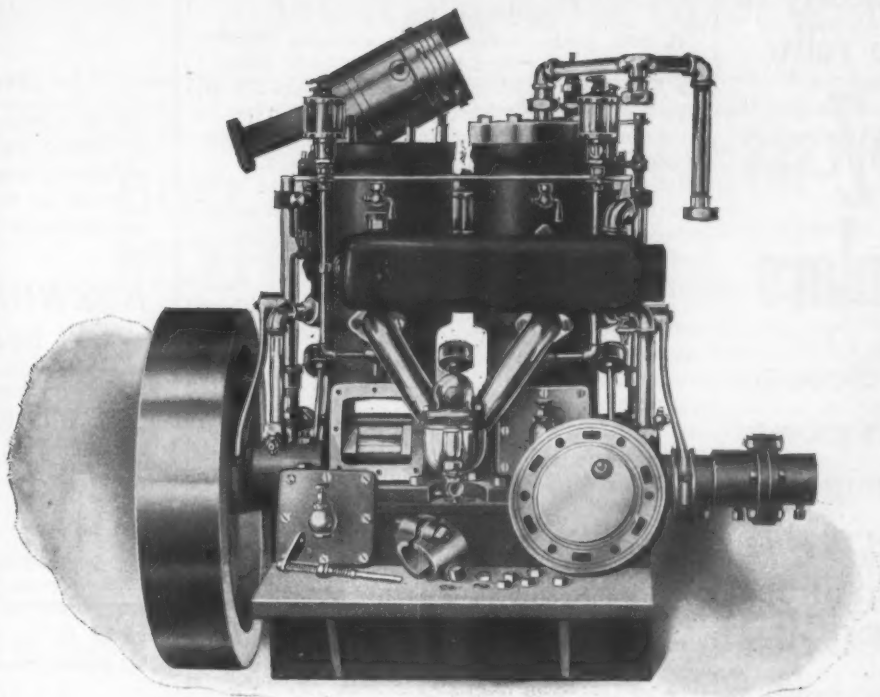
The lower base is of the extension type, extending from the

(Continued on page 422.)

THE BRIDGEPORT

"THE MOTOR THAT MOTES"

Medium Weight. Medium R.P.M. Built for Hard Service.



2½ to 28 H. P. One to four Cylinders. A practical, successful motor.

Furnished to operate on Gasolene, Kerosene or Alcohol

This illustration shows the Bridgeport and some of the distinctive features which have made it famous. Note the extreme ease with which the interior parts of one cylinder are removed without in any way disturbing the other. This means less delay, less expense and a first-class satisfactory outfit. These multiple cylinder models are of the split base type, bolted to a one-piece bed plate, the only practical method by which to provide strong support and perfect alignment of the crank-shaft. Bridgeport construction provides durability and reliability.—"*The Motor that Motes.*"

SEND FOR CATALOG

THE BRIDGEPORT MOTOR COMPANY, Inc., Bridgeport, Conn., U. S. A.

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COMMERCIAL AUTO & MOTOR BOAT EXCHANGE

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IN the great outdoors to see more clearly is to enjoy more fully.

Bausch and Lomb Zeiss Stereo Binoculars

enable you to get close to Nature. Their high power and brilliant illumination make distant objects appear clear and distinct. The word Stereo distinguishes our binoculars from others and refers to their unique Stereoscopic properties.

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Descriptive literature on request.

Our Name on a Photographic Lens, Microscope, Field Glass, Laboratory Apparatus, Engineering or any other Scientific Instrument is our Guarantee.

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High Grade Heavy Weight Tanks

For Gasolene, Water and Air of any shape or dimensions desired for any pressure. We make only work of merit.

"Light Competition Work Not Wanted."

Galvanizing of all kinds of marine work.

L. O. KOVEN & BROTHER

50 Cliff Street : : : New York

front to the after end, carrying, as well as the upper base, the complete reverse gear and mechanism. By careful designing all unnecessary weight is eliminated, but the working parts of Sterling engines carry strength and weight to the maximum. Water jackets completely surround not only the cylinders (which are cast in pairs) but the valve jackets and gas ports.

The commutator is conveniently located on the in-take side of the engine between the cylinder castings, and is driven through a vertical shaft and supported on a column. This position makes the commutator very accessible for inspection, adjustment or repair.

A Neat and Effective Air Compressing Plant

A new pump, designed for charging storage tanks with compressed air, has just been brought out by W. & J. Tiebout, of 118 Chambers Street, New York City. It is very compact, being but 10 inches in length and requiring but a 3½-inch space on the propeller shaft, to which it is coupled.

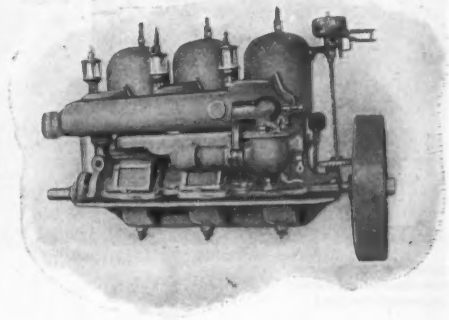
It is built in two styles, one of which has to be attached to propeller shaft after it has been removed from the engine to allow the installation, and the other being supplied with a split cam and hinged boxes on pump arms, to allow of its being attached to and detached from the shaft without uncoupling from the motor. It is so built that it can be installed on either side of the shaft that is most convenient to the boat owner. It is very strong, simple in construction, and there is nothing in its mechanism which is liable to get out of order. The manufacturers state that no appreciable extra power is required to operate it. Thirty seconds after starting up the engine the whistle may be blown, and it will pump a 10-gallon tank up to 60 pounds pressure in about ten minutes with the engine running at 400 revolutions.

When the correct pressure has been obtained, the lever shown in illustration is shifted and piston held back. This allows the cam to revolve with the shaft without operating the piston, and thereby avoids all unnecessary wear and friction. The pump is so arranged as to not increase the pressure above 60 pounds, thereby obviating all danger of bursting a 100-pound pressure tank. The pump is built to fit shafts of ⅝, ¾, ⅞, 1, 1⅛, 1¼, 1⅜ and 1½ inches diameter, and these sizes are carried in stock, but any size may be built to order.

Enlargement of a Well-Known Boat-Building Plant

The Toppan Company, well known as builders of rough-water dories and launches, have been forced to enlarge their quarters, and have secured a large tract of land in that part of Medford adjoining Boston harbor. The new factory will be one of the most up to date in the country. It will consist of a two-story brick shop of fire-proof construction, as well as the frame building now on the property, which will be utilized entirely for the knock-down department. This department has grown to considerable proportions during the last two or three seasons. As the plant will have nearly 500 feet water front on the river, the Toppan Company will have the best of facilities for launching their boats. The location is very convenient for shipment, a freight station being directly opposite. The property also extends for 500 feet along the new Riverside Boulevard, and is very easy of access. The enlargement will enable the Toppan Company to produce their famous rough-water boats in larger sizes than formerly. The demand for Toppan rough-water boats and motors is fast growing, both in this country and abroad, and we are glad to extend to their builders the best wishes of the Yachting Company in their enlarged plant.

Norwood Motors



From 5 to 50 H. P.

Are built from the highest grades of material by skilled workmen, in one of the largest manufacturing cities in the country.

Write us so we can tell you what this means to you in selecting a motor for your boat.

NORWOOD MACHINE CO.

NORWOOD, OHIO

GET THIS BIG BOAT BUILDING BOOK

Let this build your own boat easy. Our big 100 page Boat Builders Book shows you how. 300 illustrations explains "Knock-down Plans." Shows how you save ⅓ the boat builder's expense. Send 25 cents today for this book of valuable information. Money cheerfully refunded if not fully satisfied. Learn how much fun you can have this winter building a boat for next summer.

Pioneer Boat & Pattern Co., Wharf 309, Bay City, Mich.

BOAT INSURANCE

Rates Quoted for all Parts of the World

LENSSEN & CO.

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You Will Be Interested

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THE IMPROVED

BALL REVERSE GEAR

for

MOTOR BOATS

Made only of Hardened Steel Spur Gears.
Most Reliable.
Highest Grade.
Easiest to Install.

Four Sizes Carried in Stock.

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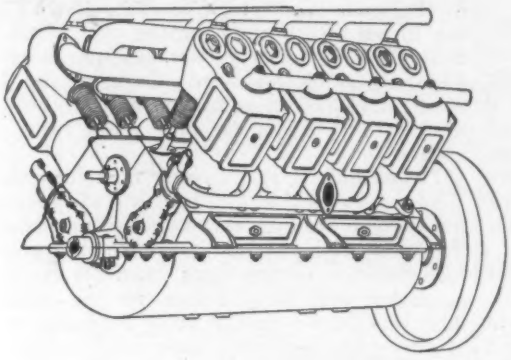
Manufactured by

New York Gear Works

56-58 Greenpoint Ave., BROOKLYN, N. Y.



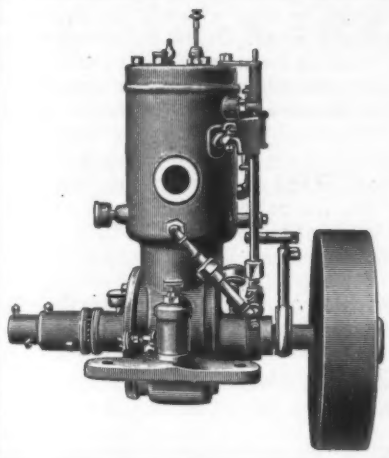
"ANTOINETTE"

Eight-Cylinder Four-Cycle

60-70 and 200 H.P.

Weight less than 500 lbs. Air starting. You can use four (4) cylinders, giving one-half power, economically. To introduce this motor to boatmen, who want more and better power, *we will take your old motor in exchange.* Send for our offer and prices.

ANTOINETTE MOTOR CO. East Providence, R. I.



ONE TO FOUR CYLINDER

BULL PUP MOTORS

Are especially adapted for
Canoes, Light Row Boats,
Yacht Tenders, Etc.

BUILT FOR SERVICE
at a Moderate Price

The Consolidated C.S.Co.

Manufacturers of the
New Improved "Fairfield" and "Park City" Auto Marine Two-Cycle Motors.

BRIDGEPORT, CONN.

Satisfied Customers

to the buyer of a marine engine are positive proof that an engine is making good.

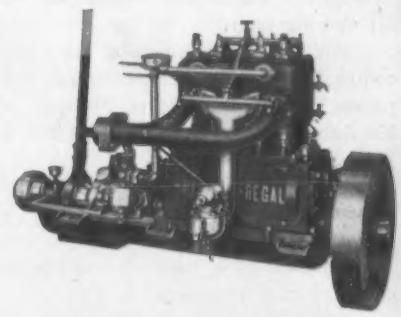
One of our customers writes:

"I have been using one of your marine engines the past two seasons, have not had the least trouble of any kind, or had I even had to tighten a bolt. Am more than satisfied with the purchase, and am intending to buy one of your larger engines for the next season."

REGAL MARINE ENGINES

have the dependable qualities that make motor boating a pleasure. They are made from 3 H.P. to 45 H.P. and from 2 to 4 cylinders. Positive lubrication, mechanically operated valves, conservative rating —these are a few of Regal Engine features that make our customers —Satisfied Customers.

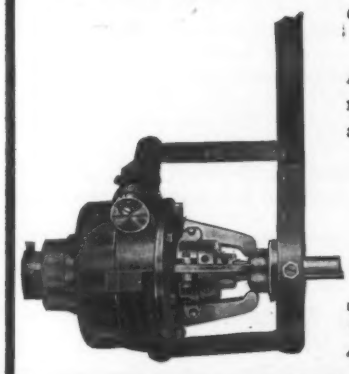
Get a copy of our new Catalogue No. 6, it contains interesting facts.



REGAL GASOLINE ENGINE COMPANY

52 West Pearl Street
Coldwater, Mich., U. S. A.

Joe's Improved Reversing Gears and "One Way" Clutches



All powers ranging from the smallest motor to motors developing 150 H. P. at 1,000 revolutions per minute.

IMPORTANT CHANGES IN CONSTRUCTION AND PRICES

Advance Circular Now Ready

The Snow & Petrelli Mfg. Co.

443 CHAPEL ST., NEW HAVEN, CONN.

MARINE MODELS

The H. E. Boucher Mfg. Co.

91 Maiden Lane, NEW YORK

INVENTIONS DEVELOPED
SPECIAL MACHINERY
PATTERN MAKING
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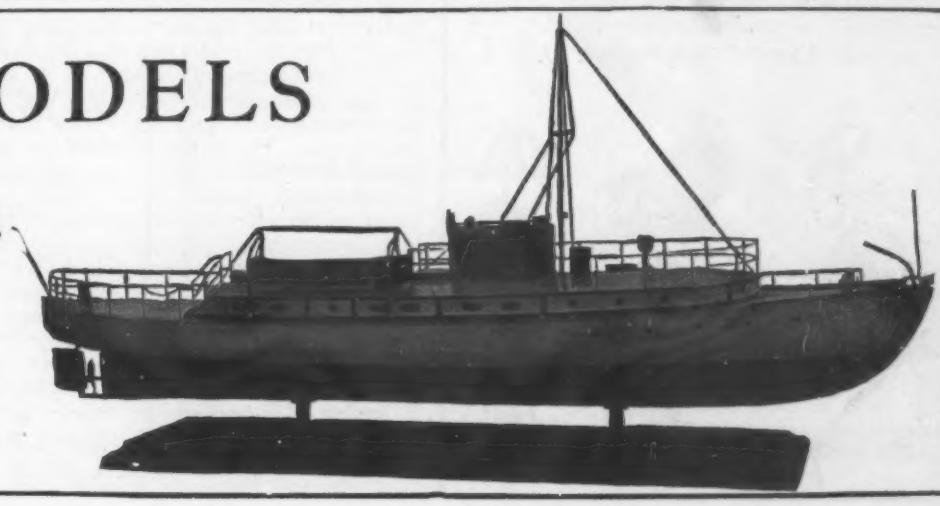
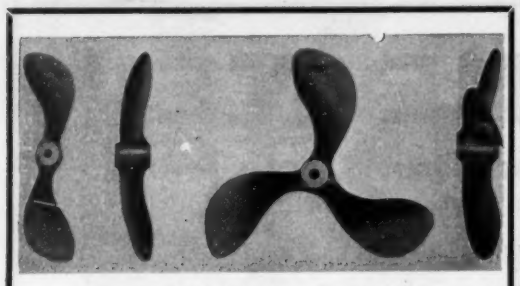
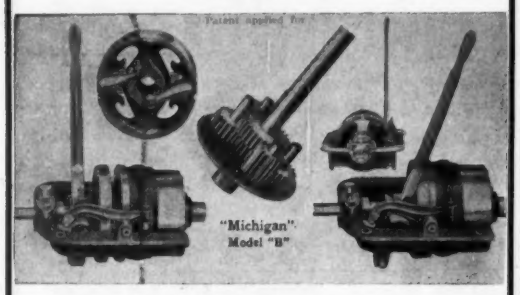




Speed Propeller Wheels

Reversible Wheels



Reverse Gears

NOTICE

To the Motor Boat Users

Now is the season for overhauling and refitting your boat.

Our sixty-page catalog free, showing complete lines of Reverse Gears, Speed Propeller Wheels, Attractive Modern Marine Hardware Air Pumps, Whistles and Under Water Exhausts.

Every person interested in boats should have our Catalog.

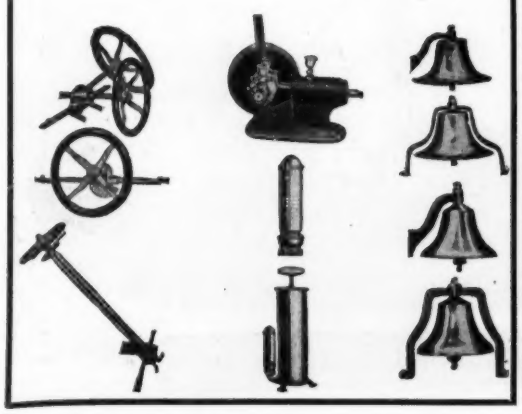
Prices right, superior quality of material

Mention this magazine — Special dis count next thirty days.

Michigan Wheel Company

Office and Factory:

GRAND RAPIDS, MICHIGAN, U. S. A.



Driftwood

With the Designers and Buildres

One of the boats that William Gardner has designed this spring, of which but little mention has been made, is a boat of Dorello type for a Pacific Coast yachtsman, Mr. Joseph Pugh, of San Pedro. The new boat is to be 38 feet waterline and 60 over all. She will be built at San Pedro, and her owner should have good picking on the Coast this summer in the numerous events that are scheduled.

Messrs. Tams, Lemoine & Crane have designed a new bark-rigged auxiliary yacht for Commodore Arthur Curtiss James, of the New York Yacht Club. She will be 201 over all, 35 feet beam and 16 feet draft, will have reciprocating engines of 400 horsepower, and will carry 19,000 square feet of sail. She will be an out-and-out auxiliary and not a steam yacht with auxiliary sail, although she will have good speed under power. This yacht will be some 40 feet longer than Aloha, Commodore James' present flagship, which Mr. Crane designed ten years ago. The Fore River Ship Building Company, of Quincy, Mass., have been awarded the contract, and will probably have the ship finished next March.

The well-known auxiliary schooner yacht Idler, which was built from Messrs. Tams, Lemoine & Crane's designs for Mr. Henry T. Sloane, is having her steam plant removed and a 100-horsepower Standard motor is being installed in its place. Mr. Crane is designing a new feathering propeller for her.

The same firm is supervising the construction of the auxiliary ketch now building at the Nilson Yacht Building Company, in Baltimore, Md. She will be named Kona, and is owned by Mr. Frank Gray Griswold, N. Y. Y. C. She will be 72 feet over all, 56 feet waterline by 17 feet by 4 feet, and was designed primarily for use in Southern waters. She is to be equipped with a 25-horsepower Craig motor, will have two staterooms, bath room and two saloons. The work is progressing well, and she will be launched in a few weeks.

Another Seneca is building at Bristol. She was ordered from the Herreshoffs by a syndicate of American Yacht Club members, and will be sailed as the challenger for the Manhassett Bay Cup, now held by the Indian Harbor Yacht Club. The Herreshoffs are also building, it is said, a sloop of the M class of the Gardenia type, built with a view of trimming that successful boat. She is to be 40 feet on the water. That she will not have everything her own way is proved by the efforts William Gardner is putting forth on Mr. Herzig's boat. The latter's cabin house will be replaced by light hatches; considerable weight will be saved below by the elimination of fittings, etc.; she will have a new sail plan, and will be a very much faster boat than she was last season, when she won thirteen first prizes and a series cup.

J. C. Vanderslice, of Camden, N. J., is building two fine cruising launches for Mr. A. C. Graw, of Haddonfield, N. J., and Mr. Henry Shetzline, of Philadelphia. The former of these is a 32-foot by 8-foot 6-inch hunting cabin cruiser, equipped with a 10-horsepower, double-cylinder Jager four-cycle motor, which will drive her 9 miles per hour. She is equipped with all conveniences, and has accommodations for four or five people. The other is one of the new Limousine cabin runabouts, 30 feet by 6 feet, and is to be equipped with an 18-horsepower, three-cylinder Jager four-cycle engine, which will drive her at a speed of 14 miles per hour. Mr. Max Riebenack, Philadelphia, Pa., is having a 25-horsepower, four-cylinder Jager four-cycle engine installed, through the Edwin Kain Company, in his 50-foot launch Eleanor-Gertrude, well known in Atlantic City.

The Long Island Race

The race around Long Island under, the flags of the Atlantic and New Rochelle Yacht Clubs, has aroused enthusiasm among the Sound and Gravesend Bay sailors. Already inquiries and requests for entry blanks from Barnegat and Great South Bays have come in, and it is probable that there will be a number of starters from these waters.

The conditions, as drawn up by the committees, seem most equitable, and have already been tried out in other long-distance races with satisfaction. The measurement used is the simplest possible. The course takes the boats down the bay to the southwest spit buoy before turning eastward. This was decided upon as being the fairer, in that it prevented the small, light draft boats from skinning in under the Coney Island beach, while the larger ones would have to stand further off shore. As the tide is fair down the bay, all the boats will be served alike. With a southerly wind, Montauk should be reached early the following morning, and the course should be completed by the leading boats in from forty-two to fifty hours. There is no reason why anyone with a good, seaworthy boat should not find the course to his liking. It is neither too long to thoroughly tire out the crew, and yet it is long enough to give, with the uncertainties of ocean racing, every boat a "look-in" for the prizes, and to put a premium on skillful handling and ability to find the shortest way around the course. Entry blanks may be secured from the regatta committees of the Atlantic and New Rochelle Yacht Clubs, or from the office of YACHTING, 20 Vesey Street.

The Block Island Ra es

By far the most popular long-distance events of past seasons have been the Block Island races of the New York Athletic Club, as many as thirty-one entries having started in the sailing race. Last year a power boat race was inaugurated, starting on the same day, and this event will be repeated this year, the boats being started six hours after the windjammers are sent away. This will allow the boats to finish during daylight. The event should prove as attractive to power boat owners as the sailing men have already found it to be. With Harry Jackson as chairman of the committee in charge of the race a large entry list is assured, and here entries mean actual starters. The date scheduled for the start this year is Saturday, June 19, and the following are the general conditions:

SAILING RACE—Open to decked or cabin yachts, in cruising trim of less than 32-feet waterline.

Course—From Whortleberry Island to the west harbor of Block Island, disregarding buoys. Distance, 100 nautical miles.

Starting Line—Between two boats flying club flags anchored to the northeast of Whortleberry Island.

Time of Start—11.00 A. M.

Finish—Leave committee boat, anchored, inside of west harbor on either hand.

Crew—No restrictions except only Corinthians may steer.

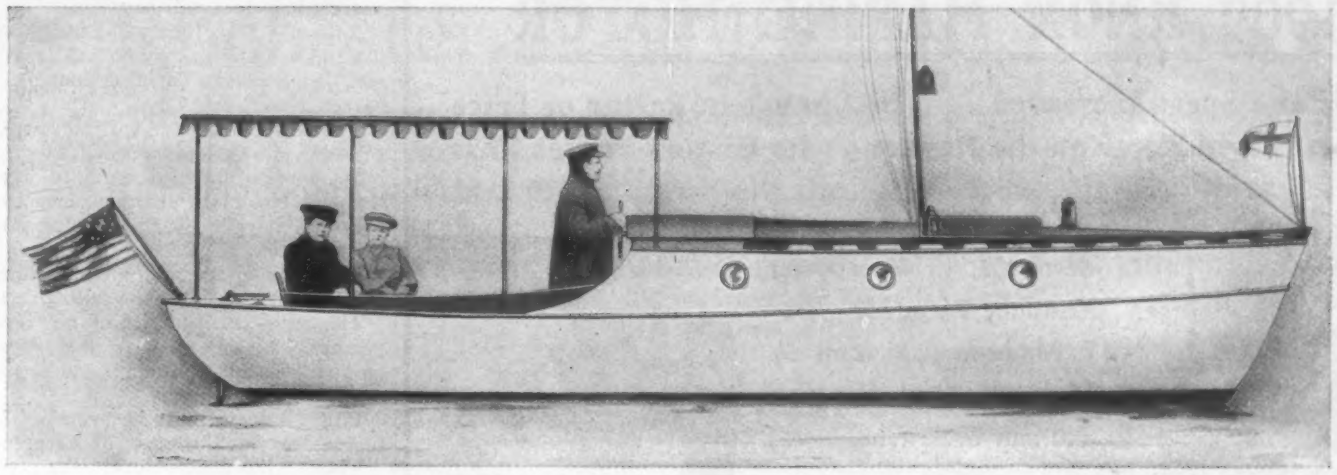
Sails—No restrictions as to size, number or manner of carrying.

Time Allowance—Twelve minutes per over-all foot. Yawls 5 per cent and auxiliaries 5 per cent additional.

Rules—Unless otherwise specified in this notice the rules of the Yacht Racing Association of Long Island Sound will govern.

Prizes—Five prizes are offered in the open event with a special prize to handicap class, sailing in one division, and a special prize for best elapsed time.

Measurement—Certificates of measurement giving over-all and waterline length will be required,



This $1500 Racine Cruiser Only $850

Here is the boat that made **the big hit** at all the Motor-Boat Shows this winter—a stoutly-built, handsome Cruiser that will take you anywhere you want to go. Sleeping accommodations for four, toilet and galley, and plenty of storage space below decks, with a broad, roomy cockpit aft. Now is the time to order one for spring delivery.

SPECIFICATIONS:—Length, 28 ft.; beam, 7 ft.; draught, 24 in. Frame of White Oak, planking of Cypress, Oak finish. Salt water fitted throughout. 8 H.P. double cylinder engine drives the boat 8 miles per hour. All controls centered at Steering Wheel.

Send 10c for complete catalog **OTHER RACINE SPECIALS FOR 1909** Send 10c for complete catalog

16-foot Dory Launch	$150	25-foot Family Launch	$600
18-foot Speedabout	300	25-foot Cruiser	750
25-foot Power Dory	450	Best 3 H.P. Engine on the market	60

RACINE BOAT MFG. CO., Box 206 Muskegon, Mich.

BRANCH STORES:—1626 Broadway, New York; 1610 Michigan Ave., Chicago; 253 Jefferson Ave., Detroit; 38 Delaware Ave., Camden, N. J.; 321 First Ave. So., Seattle, Wash. Iver Johnson Sptg. Gds. Co., Boston, New England Agents.

EFFICIENT WHISTLES

AND WHISTLE OUTFITS

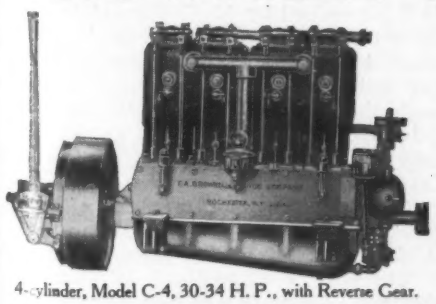
They pass Government inspection and more than please the most critical. While our product is known the world over for its **Superior Qualities**—our modern equipment—system—and the large quantities made, enables us to quote very reasonable prices.

We make outfits ranging in price from **$5 to $50 each** and every part of our outfit is the best the market affords. Our Catalog Y free for the asking. Write TO-DAY.

Autochime Launch Special

GRAY-HAWLEY MFG. COMPANY
DETROIT, MICH.
Makers of Superior Motor Boat and Motor Car Accessories

BROWNELL MOTORS



4-cylinder, Model C-4, 30-34 H. P., with Reverse Gear.

Superior in the many points that go to make the most dependable and satisfactory Motor.

Sizes, 14 to 150 H.P. in 4, 6 and 8 cylinders.

A Postal—A Catalogue

F. A. BROWNELL MOTOR COMPANY
ROCHESTER, N. Y.
Marine Representative for Massachusetts, GEO. LAWLEY & SON CORP., South Boston.

Roberts Motors Win

Designed by E. W. Roberts, M. E., one of the most expert mechanical engineers in the United States, and constructed under his personal supervision. ROBERTS MOTORS (1½ to 60 H. P.) are infinitely superior to every other marine motor made. They are simple in construction and mechanically perfect.

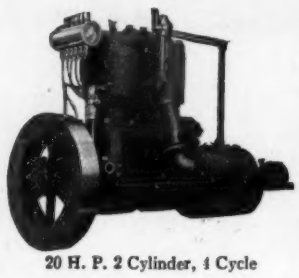
Roberts Motors Are Trouble Proof

No 'freak" ideas—no base explosions, economical in use of fuel—interchangeable parts that fit perfectly—no gaskets—thoroughly tested in the best testing room in the United States. Every ROBERTS MOTOR is fully guaranteed. **Write for Free Catalogue** and "Book of Testimonials.' Read what actual users of ROBERTS ENGINES say. **Good Agents Wanted.**

ROBERTS MOTOR CO.
1402 Columbus Avenue **Sandusky, Ohio, U. S. A.**

1909 KNOX MARINE MOTOR

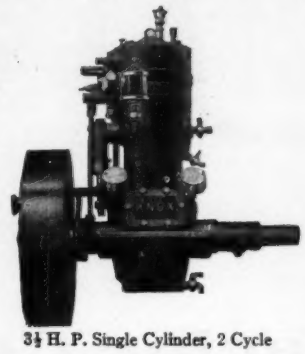
Power and Speed Increased **No Change in Rating or Price**
Longest Lived Motor on the Market **Its History Proves This**



20 H. P. 2 Cylinder, 4 Cycle

Our 1909 Motors will develop 25% more power than they are rated.

Made in sizes from 2½ H. P. to 40 H. P.—two and four cycle type.



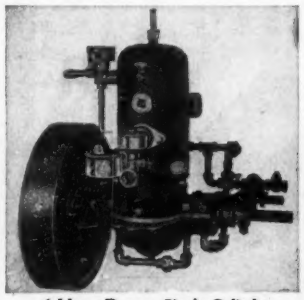
3½ H. P. Single Cylinder, 2 Cycle

GENERAL OFFICE AND WORKS
CAMDEN ANCHOR-ROCKLAND MACHINE COMPANY
CAMDEN, MAINE, U. S. A.
GENERAL SALES OFFICE
114 STATE STREET, BOSTON, MASS.

CUSHIONS That "Fit"

EST'B 1845

MANUFACTURED BY
M.W. FOGG 202 FRONT ST NEW YORK U SA



6 Horse Power, Single Cylinder Victor Marine Motor, 1908 Model

Robert S. Hill, Machinist and Engineer

Testimonial

Binghamton, N. Y.
August 15, 1908

Mr. R. S. Hill,
24 E. Woodbridge St.,
Detroit, Mich.

Dear Sir: I am indeed sorry to have delayed answering your letter, but we left here July 9th for a trip on the launch and did not return until this morning. Our run was over 1,000 miles, and your "Victor" engine never made a slip or slow up once on the entire trip. Enclosed find check to cover amount of your bill.

Signed, A. B. SAWYER

24 E. Woodbridge St. DETROIT MICH.

SPRAY HELMET, $1.00
LIFE PRESERVER PILLOW, $1.00

C. M. JACOBSEN, Boat Outfitter, Detroit, Mich. is now putting on the market a life-preserver pillow and a spray helmet for speed boat drivers, either of which can be had by mailing him $1.00. They are something entirely new and the price has been placed to put them within the reach of all.

This is Useful and Practical
Stain the woodwork on your boat with
STAINALL COLORS
One package dissolved in a quart of water will give a good strong stain, anyone of the following colors: Red, Blue, Green, Tan, Gray, Maroon, Black, Violet, Pink, Yellow, Orange, Brown. This finished up with oil will show up the grain and give fine looking woodwork.
SEND 10 CENTS WITH COLOR DESIRED TO THE
FLOWLAN MFG. CO. 399 8th St., BROOKLYN, N. Y.

"Old Town Canoe"

Wherever the White Man Goes

in the pursuit of science, adventure or pleasure, whether as naturalist, explorer or sportsman, he can have a light water transport exactly suited to his peculiar needs and special requirements, in an **"Old Town Canoe."** Anthony Fiala took a flotilla of them on his Ziegler Polar Expedition and found them "well built and serviceable."

Let us know what your trip will require and we'll show you a model in an "Old Town Canoe" which will meet the most exacting requirements

Our new free illustrated catalogue with prices will interest you—send for it

Prompt deliveries. Agents all cities. Factory has been doubled to meet demand.

OLD TOWN CANOE CO.
325 Middle Street
Old Town, Maine, U. S. A.

but in figuring allowance the over-all length to the nearest half foot will be taken.

Entries—Close June 15. Entry blanks, containing full conditions, may be had from H. A. Jackson, Jr., chairman yachting committee, 409 Pearl Street, New York City.

The power boat race will be started at 5 P. M. of same day, and is opened to cruising power boats, enrolled in any recognized club, of not less than 25 nor more than 40 feet over all, with greatest waterline beam not less than one-fifth the waterline length.

The course, starting and finishing lines are identical with those of the sailing race.

The crew shall consist of not less than three persons. In the event of the owner not being on board he must be represented by a member of a recognized club.

Power—Boats must be propelled by explosive engines, operated by gasolene, kerosene or alcohol.

Time Allowance—Under the 1905 rules of American Power Boat Association, figured at 60 per cent of the tables, with constant of two-stroke engines at 850.

Measurement—Certificates by a measurer of a recognized club, or reputable naval architect, must be in hands of committee not later than June 15.

Prizes—First prize, the Day Cup, which must be won two years over this course by the same owner to become his absolute property. Second prize presented by the New York Athletic Club if five start.

Entries close on June 15 with power boat race committee, H. A. Jackson, Jr., chairman, 239 Canal Street, New York City.

Some Recent Transfers

The following sales have recently been effected through the agency of Frank Bowne Jones:

The schooner yacht Scimitar, by Eutis L. Hopkins to Phillip H. Johnson, of Philadelphia; the runabout Hornet, by L. J. Bell to William Carruthers, of Montreal; the gasolene launch Lesbia, John Donnelly to Alonzo T. Witherell; the gasolene launch Sakana, by Morgan Barney to Francis G. Stewart; the sloop yacht Urchin, by Matthew Fauth to A. T. Salisbury; the sloop yacht Mimosa I, by T. M. T. Raborg to Charles A. Cooley; the knockabout Kittiwynk, by Capt. John J. Phelps to Griffith L. Johnson; the raceabout Tom Boy, by Y. Pendas to Paul H. Barnes; the raceabout Chinook, by Robert Mallory, Jr., to Hazen Morse and John F. Lambden; the yawl Freyer, to M. S. Kattenhorn; the sloop yacht Spider, by Hendon Chubb to Y. Pendas.

The Hollis Burgess Yacht Agency has sold the 45-foot cruising gasolene launch Princess, owned by C. D. Tower, of Boston, to Arthur G. Bigelow, of Cohasset, Mass.

The same agency has also sold the 30-foot waterline auxiliary yawl Sinbad, owned by Rev. Leighton Parks, of New York, to John C. Phillips, of Boston, Mass., and the fast Sonder class sloop Sally VIII, owned by M. D. Truesdale, of New York, to Dwight F. Davis, of St. Louis, Mo., Sally VIII will be used for racing on Buzzard's Bay.

The following yacht sales have been made through the office of Stanley M. Seaman, 220 Broadway, New York:

Sloop Volunteer, for the J. M. Forbes Estate, to Capt. Charles Barr. A member of N. Y. Y. C. is considering chartering her for the coming season.

Gasolene express cruising yacht Gansetta, Mr. C. W. Lee, N. Y. Y. C., to Mr. E. W. Clark, Philadelphia, Pa. Gansetta will be used for cruising and also as tender to the racing schooner Irolita.

Gasolene cruiser Rambler, Dr. J. C. Phillips, of Boston, to Mr. Thomas J. Egan, New York. Rambler is fitting out at Manchester, and will be

The Rochester Fast Family Runabout

is a dry, safe, comfortable 25-foot boat, which will seat eight passengers without crowding, and make from 13 to 18 miles per hour, according to her engine equipment (from 8 to 16 h.p.). She is the embodiment of speed, comfort and safety, and so exquisitely finished that she stands out among other craft as an edition-de-luxe does among a collection of paper covered novels. ¶ She will carry your family and friends anywhere, no matter what the weather, and will show her stern to all the boats in your waters—with the exception of the out-and-out racers. ¶ Moreover, her cost is so moderate that you will be surprised to find how much we give in the way of elegance and seaworthiness for the money.

One of the secrets of her perfection is that she is equipped with the

ROCHESTER ENGINE

whose perfect construction, accuracy of design and watchlike finish, combined with strength, durability and lightness and economy of fuel which twelve years of experience has produced, rank it easily first among the two-cycle motors of to-day. Uses gasolene or kerosene.

Send for New Illustrated 1909 Catalogue

ROCHESTER GAS ENGINE CO.
715 Driving Park Ave.
ROCHESTER, N. Y.

ROCHESTER" 25 Foot Semi-Speed Boat

MORSS MARINE FITTINGS

EVERYTHING
USED ON A BOAT—

Propellers, Electrical Goods, Paints, Cushions, Deck Fittings, Whistles, Bells, Anchors, etc., etc.

All the Up-to-date Specialties, Including

The SKENE Chock	NO-KLOG Filter
HERMETIC Battery Case	HALL Anchor
TRIMOUNT Pumps	HARMONY Whistle

Let us estimate on your needs.

Have you our Catalog? If not, send for it, enclosing 5 cents for mailing.

A. S. MORSS CO.

212 Commercial Street
BOSTON
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TRUSCOTT 1909

Launches and Marine MOTORS

are described in the most comprehensive catalogs ever printed.
Send 5 stamps.

Truscott Boat Mfg. Co.

Box 607, ST. JOSEPH, Mich.

Branches with complete stock:
1675 Broadway, New York 37 Haverhill St., Boston
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HODGSON'S Portable Houses

Have your own Garage. Save expenses.

Golf Club. Made in many sizes.

Used in Hospital outdoor work by City of New York, Hospital Brookline, Mass., Worcester, Mass., Rutherfordton, N.C., etc.

Denman Thompson, (of Old Homestead fame) says: "Cannot say too much in praise of your Cottage and Garage"

California Redwood Bungalow. Veranda, living room, 2 bedrooms, servant's room, kitchen, bathroom, back porch, 32 ft. front, height 16 ft.

HODGSON'S WIGWARM PORTABLE HOUSES are superior to any others. Unlike most portable houses, instead of being an "eyesore" they combine beauty of architecture which makes them attractive anywhere—with strength and durability little short of marvelous. For three years one has weathered the severest storms on the Maine Coast. Another proved comfortable in winter with temperature 32 degrees below zero with six feet of snow. They are built of California Redwood, with frames of heavy fir stock. Absolutely weather and rain proof—cool in summer and warm in winter. Easy to transport and to set up. All necessary fittings accompany house. Sizes, one room up.

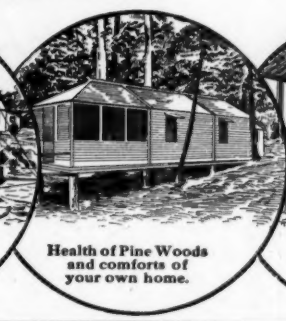
Descriptive catalog, with net cash prices, fully illustrated with photographs covering plans and testimonials. Free on request

E. F. HODGSON CO., 116-118 Washington St., Boston, Mass.

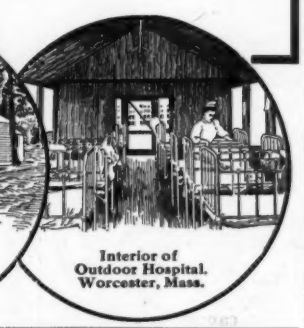
Factory at Dover, Mass.

One Room Cottage with Porch and Ell.

Seashore Cottage. Proof against weather or mosquitoes.



Health of Pine Woods and comforts of your own home.



Interior of Outdoor Hospital. Worcester, Mass.

Our Sails on the 30-Footers

The boats we fitted out last season, were the first to finish in the races. Next year will see our sails on a great many of the best boats in this country.

JONES & ROBINSON

Manufacturers of the J. and R. Perfection Spray Hood

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SAIL MAKER

Special attention given to Yacht Sails of all kinds, canvas work of every description. Estimates Cheerfully given

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CRYSTAL Domino SUGAR

5lb Sealed Boxes Only! · Best Sugar for Tea and Coffee! · By Grocers Everywhere!

used for extensive cruising along the Atlantic Coast.

N. Y. Y. C., 30-footer Minx, Mr. Howard Willets, New York, to Mr. John J. Mason, New Haven, Conn. She will be used for racing on the Sound this summer.

Gasolene cruiser Shur, Mr. D. Y. Pendas, New York, to Mr. George Lane, Poughkeepsie, N. Y. Now fitting out for cruising and will be used on the Hudson River and Lakes.

Gasolene cruiser La Vedette, for the Greenport Basin & Construction Company, Greenport, L. I., to Mr. Frank A. Egan, New York City.

Schooner Sitka, Mr. Henry F. Noyes to Mr. Everett H. Converse. She may possibly be entered in the Bermuda race.

Schooner yacht Hookah, Mr. Amory Leland to Mr. T. M. R. Meikleham, to be used for cruising east of Vineyard Haven.

Launch Idler, Mr. Z. Wilson, of Locust Valley, N. Y., to Mr. James C. Williams, Wilmington, N. C.

Auxiliary yawl Omoo, Charles E. Littlefield, receiver A. O. Brown & Company, to Mr. J. B. Keogh, Chicago, Ill. Will leave for Lakes about the 1st of May.

Cruising yawl Altair, Mr. George Luke, Cos Cob, Conn., to Mr. Herbert L. Stone, of New York.

Sloop Orion, Mr. Theodore Hill to Dr. W. A. Frankland, Washington, D. C. Now fitting out at New Rochelle preparatory to leaving for home waters.

Hollis Burgess, the well-known yacht designer and broker of Boston, has recently purchased the 22-footer Chief from Mr. Clinton D. Merrill.

Changes in Firm of Yacht Brokers

A change in the firm name of Collender & Kiggins, yacht brokers, of 45 Broadway, takes effect May 1, and is caused by the retirement of Mr. William A. Collender from the firm. Mr. W. P. Kiggins will conduct in the future the business of selling, chartering and care of yachts under his own name at the same address.

What the Law Requires for Equipment of Motor Boats

The Department of Commerce and Labor has notified the collectors of customs and others concerned that the law governing the equipment of small motor vessels, which will be enforced this summer, reads as follows:

WHISTLE, FOGHORN AND BELL

All motor vessels, without regard to size or use, must be provided with an efficient whistle, an efficient foghorn and an efficient bell. No size or style of whistle, foghorn or bell is prescribed, provided it is available and sufficient for the use for which it is intended. The word "efficient" must be taken in its ordinary sense, considered with reference to the object intended by the provisions in which the word appears, namely, the production of certain signals. The power to operate the whistle is not prescribed, but it must be of such a character as to produce a "prolonged blast," which is defined as of from four to six seconds' duration.

LIGHTS

When navigated between sunset and sunrise, they must carry regulation lights, namely:

1. A bright, white light at the bow or head of the vessel.

2. A green light on the starboard side and a red light on the port side, provided with proper screens. The side lights may be so affixed to the coaming or to the sides of the deck house as to be properly screened, provided the lantern be backed with metal. Whenever the green and red side lights cannot be fixed, they must be kept

YOUR SAFETY DEMANDS THE Baldridge Reverse Gear

"Makes Good When The Test Comes"

Eliminate danger and delay from motor boating by equipping your engine with a Baldridge Reverse Gear. Gives quick and absolute control of your engine, for starting, backing up or stopping.

Simpler, more compact, more durable than any other reverse gear. Beware of cheap reverse gears made simply to sell. Every Baldridge is tested under running conditions before leaving factory, and is fully guaranteed.

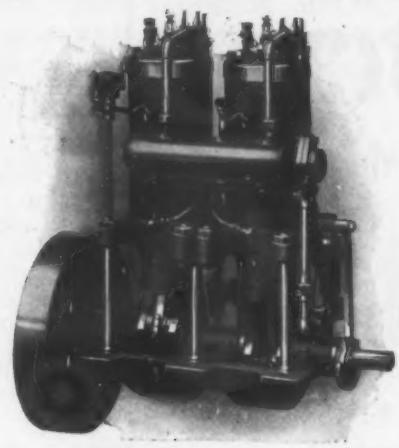
Prices and descriptive matter sent on request. Agents Wanted.

The Smith & Baldridge Machine Co.
68 Amsterdam Ave., Detroit, Mich.

NO CRANK CASE!

(2 CYCLE)

BUILT LIKE A STEAM ENGINE!



POWELL

DIFFERENTLY BETTER!

OPEN BASE—MEANS every part in plain sight—get-at-able!

OPEN BASE—MEANS doing away with crank-case leakage—and instead of weakening primary compressions you get a high and UNVARYING compression.

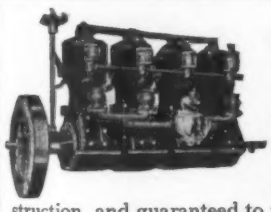
OPEN BASE—MEANS no more dirty oily mixtures as made in crank case—but instead a PURE gas mixture that is quicker-firing and more powerful.

WE GET the first or primary compression in the cylinder—under a hollow piston in the piston chamber.

We also make Medium Speed, Heavy Duty Engines, 1 to 4 cyl., 10 to 40 H.P.

Learn all about this engine—our booklet tells the rest—it's free—get it—read it.

THE POWELL ENGINE CORPORATION, 47 Warren St., NEW YORK



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The Engine that has come the nearest to being an all-around engine of any yet produced. As a commercial proposition it cannot be excelled. Not too heavy for a speed boat, and not too light for a working boat. Of two-cycle construction, and guaranteed to run every day of the year under full load, and to last a life-time with very little repairs, it being free from the mess of valves, gears, cams, rollers, springs, etc., relative to four-cycle construction.

Develops rated hp. at medium speed; can be speeded up to obtain 30 per cent. more than rated hp. More hp. for every dollar put into it than any other engine on the market. Write for descriptive catalogue.

Good live agents wanted in all parts of the world. Inducements that will surprise you. **Do it now**

THE AUGER ENGINE CO.
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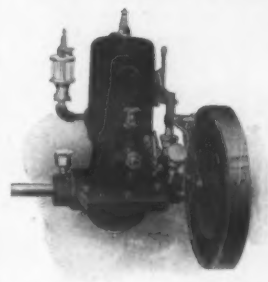
Northwestern Marine Engine



Powerful engines for high speed boats. Strictly high grade and in use by the U. S. Government Light House Tenders, also by the Chicago Police Department, cases where extreme speed and absolute reliability are required. Very compact and silent running. An engine so carefully built any woman or child can operate it. Not the cheapest, but the best. 2 to 10 H. P. Retail price $40.00 and up. Wholesale prices to boat builders and agents where we are not already represented.

Our big 1909 catalogue is worth sending for.

NORTHWESTERN STEEL & IRON WORKS, - Eau Claire, Wis.

No Boats Like Mullins Boats

THEY INCREASE VACATION PLEASURES

They are lighter, stronger and easier to row

Built of pressed steel and fitted with large air chambers like life boats. They are absolutely safe—never leak—crack—dry out—warp—or sink—and last a lifetime.

STRONG—SAFE—SPEEDY

Superior to any other boats whether built of wood or steel. The ideal boat for families—hunting—fishing—summer resort—boat liveries, etc.

Our catalog of row boats, hunting boats, fishing boats, launches, motor boats and marine engines, tells you all about our 1909 Models and what exceptional values they offer at very reasonable prices. Better write for a copy to-day.

Our new Models designed by Whittelsey & Whitaker, of New York, embody the most advanced ideas of this celebrated firm in launch and motor boat designing.

Let us tell you all about Mullins "1909 Special" $110

The Greatest Launch Bargain Ever Offered

W. H. MULLINS CO. 150 Franklin St., Salem, O.

Trade **LOWELL** Mark
Reg. U. S. Pat. Off.
DUCK

Ask the Winners

HERE ARE TEN WINNERS WHICH HAVE CROSSED THE LINE FIRST WITH LOWELL DUCK

ELMINA II	CHERRY CIRCLE
DERVISH	QUEEN
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GENESEE	HAYSEED II.
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THERE ARE HUNDREDS OF OTHERS

Regular for Cruising
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Lowell Weaving Co.
Lowell
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Patented
"Through the tangle like an eel."

You **Can't** Stick a
"Stickler" Wonderful Weedless Wheel
Free Booklet
Stickler Weedless Wheel Co., Inc.
Cook St., Portage, Wis.

lighted and ready for use as provided by article 6 of the act of June 7, 1897.

The law does not appear to permit the use of a three-color "combination" light.

3. A white light aft, showing all around the horizon, to range with the head light.

COPIES OF RULES

Such vessels are also required to have on board two printed copies of the rules which must be observed by them, which rules will be furnished by local inspectors of steam vessels on request.

LIFE PRESERVERS

All such vessels of 15 gross tons or less engaged in carrying passengers for hire, in addition to the equipment above stated, are required to carry one life preserver for each passenger carried, and shall be operated only in charge of a person duly licensed by the local inspectors of steam vessels. Such vessels when used only as private pleasure boats and not at any time engaged in the carriage of passengers for hire are not obliged to comply with the provisions of law in regard to life preservers and licensed operators. The life preservers must be of the sort prescribed by the regulations, and must bear the United States inspectors' stamp.

While the law does not require it, the Department recommends, in the interest of safety to life, that a life preserver for each person on board be carried on all motor boats, regardless of size or occupation.

DOCUMENTING, INSPECTION, ETC.

All motor boats of over 5 net tons engaged in the carriage of freight or passengers for hire must be documented; that is to say, licensed by the collectors of customs. Vessels under 5 net tons are not documented in any case. The license of the vessel obtained from the collector of customs (designated a document) is additional to and must not be confounded with the license required for the operator of a motor boat of 15 gross tons or less carrying passengers for hire.

Motor vessels of over 15 gross tons engaged in the carriage of passengers or freight for hire must also be inspected by the United States local inspectors of steam vessels, and must carry a licensed engineer and a licensed pilot.

Documented vessels must have name and home port on stern and name on each bow. Official measurement is necessary only in case of vessels requiring to be documented.

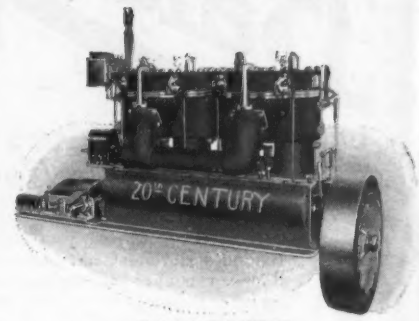
News of the Yacht Clubs

New Rochelle Yacht Club

The New Rochelle Yacht Club received thirty-one applications for membership during March, and they are still coming in. Last year the club liquidated a debt of $2,000, and now, being in splendid shape financially, is proceeding with improvements to its grounds and the renovation of its club house. The fleet in Echo Bay, already the largest of any club on the Sound, will be increased by at least ten boats belonging to the incoming new members. In addition, a number of boats are in process of building for old members, among which is a splendid 60-foot power cruiser for Vice-Commodore M. W. Houck.

L. D. Huntington, Jr., has just launched the auxiliary ketch Snug, from his own design, for Mr. Daniel Bacon, the latter having very recently sold Tamerlane, of Bermuda race fame. Snug is a rather novel departure of yacht building. She is 30 feet over all, 25 feet waterline, 9 feet 6 inches beam and 5 feet 6 inches draft, and has exceptionally great freeboard. Spreading less than 600 square feet of sail she is very easily handled by one man. Though small and handy, she has over 6 feet of head room, and can sleep comfortably six

20th CENTURY
THE BEST MOTOR BUILT
SIMPLE DURABILITY AND RELIABILITY **ECONOMICAL**
WE INVITE INSPECTION

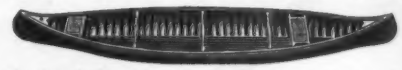


2-3-4-6 CYLINDER
10, 12, 18, 24, 30, 50, 80 and 120 H. P

Write for catalogue of our latest motors. The improvements on our 1909 machine keep it at the "top of the heap." Visit our factory and compare our motor with other makes in prices, etc.

N. Y. YACHT, LAUNCH AND ENGINE CO.
MORRIS HEIGHTS, NEW YORK CITY

MORRIS CANVAS COVERED CANOES



Are the kind that the man who *knows* uses. They cost a trifle more than the unsatisfactory kind
Send for 1909 Catalogue. B. N. MORRIS. Veazie, Me.

Tile Yacht Stoves

Only suitable **stove** on the market. Of English design, tile to **harmonize** with **cabin furnishings.**

PIPE HOLE IN TOP OR BACK
Write for Circular
MURDOCK-SHAW CO.
125 FEDERAL ST.
BOSTON

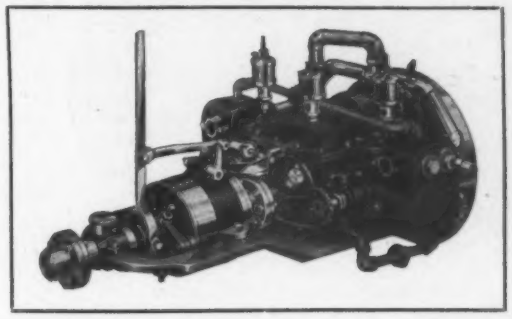
TANKS
GALVANIZED OR PAINTE
GASOLENE TANKS
WATER TANKS
HIGH PRESSURE AIR TANK
Tanks for
Mufflers, Air Whistles, Etc.
WM. B. SCAIFE & SONS CO
Founded 1802 PITTSBURGH, P

Sintz

Ten Days' Trial on Your Own Boat

SO POSITIVE are we that the "Sintz" Non-Vibrating Motor will absolutely please and satisfy you that we make the above offer—the most liberal engine proposition you ever received. You have nothing to lose and everything to gain. If you like the engine you pay—if you don't like it—send it back. You are safe either way.

Sintz



Motor

MR. BOATMAN: You want a motor in your boat that is built right, and will stay right. One that is always ready to go and keep going, and one that has most of the weight below the water line, and can be installed under locker, giving the greatest possible seating capacity and clearest construction. You get these features in the "Sintz" under a positive guarantee.

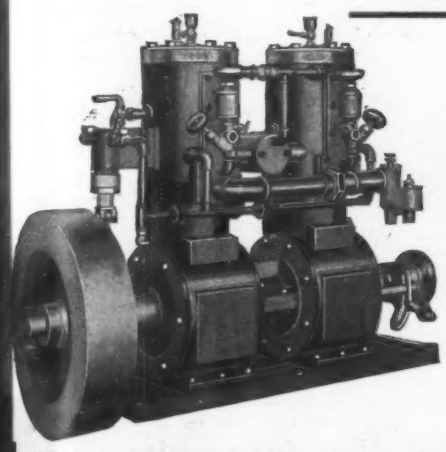
Remember that we do not ask you to take our word for what motor will do, but give you *Ten Days' Trial in Your Boat.* Isn't that fair? Think it over and write for free catalog.

GUY L. SINTZ COMPANY
Marshall, Michigan

Desk M. B.

GUY L. SINTZ CO. :: :: MARSHALL, MICH.

BREED & DeBLOIS, Eastern Distributers
1876 Broadway, New York City



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BENTON MOTORS and MARINE FIXTURES

It will pay you

THOS. P. BENTON & SON, 201 South Front Street, LA CROSSE, WIS.

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POWER—SAILING—PADDLING
CANOES

Our **POWER CANOE** is equipped with a 2 H. P., 2 cylinder motor, will make 10 to 12 miles per hour.

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DETROIT RIVER CANOE WORKS, 276 WIGHT ST. DETROIT, MICH.

COIL AND SPARK PLUG

PLUG REMOVED

Perfex Waterproof

COMBINED INDUCTION COIL AND DETACHABLE SPARK PLUG
FOR JUMP SPARK ENGINES

No Secondary Wiring, No Leak, No Shock, No Hertz Wave Loss

An Open Boat Necessity — Water Cannot Short-Circuit
A Cabin Boat Requirement — Heat, Break and Trouble Proof
Makes the Engine do its Best — No Metal Jacket to Weaken Coil Efficiency

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IGNITION

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MASTER VIBRATOR, OPERATES ALL CYLINDERS

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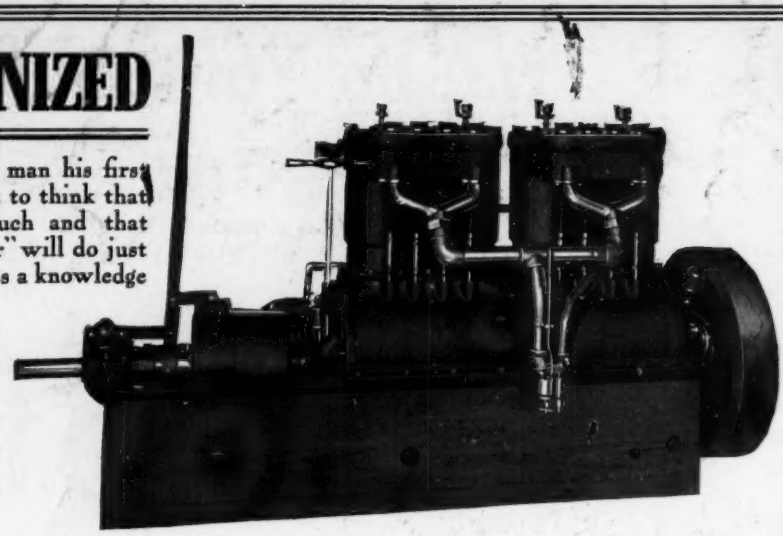
ELECTRIC GOODS MFG. CO., Ginn Bldg. Pearl St., BOSTON, MASS.

MODERNIZED

We seldom sell a man his first engine. He is apt to think that we charge too much and that "something cheaper" will do just as well. It requires a knowledge of engines and some actual experience in their use, to render a man appreciative of the good points of the "Modernized" and why it is worth the price.



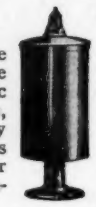
We build 8, 12, 16, 25, 50 and 75 H.P. 2 to 6 cylinders, all four cycle.
Very liberal bore and stroke. Fittings and Accessories the best the world afford.

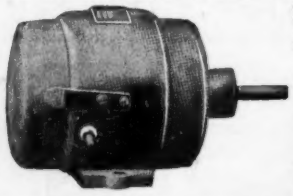
BREED & DE BLOIS, 1876 Broadway, New York

Wolverine, Syracuse and Stanley Motors demonstrated under their own power.

CHARGING DYNAMO

for ignition, light search-light, charge storage battery and blows electric whistle at same time. Enclosed and water-proof. Electric whistles are durable, give a loud clear tone, run on storage battery or a few ordinary dry batteries. Send for catalogue of low prices on motor boat accessories.





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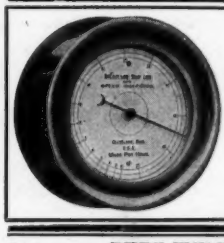
Boston, Mass.

WANTED

I want every boat builder and boat owner to know that I manufacture and carry in stock a complete line of polished brass and nickel plated boat fittings and supplies. Send 6c. in stamps for our No. 4 Catalog. Ship Bells a specialty. CHAS. KAUFMANN, 28 Main Street, Oshkosh, Wis.



The Nicholson Speed Indicator

shows the speed of motor boats and yachts. It can be easily installed in the cabin or cockpit of any boat. No trailing line overboard. Send for circular describing this instrument.

NICHOLSON SHIP LOG CO.
Cleveland, Ohio
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662 Bullitt Bldg., Phila., Pa.
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RUBBERSET *Shaving Brushes*

Bristles held in a solid bed of hard rubber. The only brushes guaranteed never to lose a bristle. 25 cents to $6.00.

THE RUBBERSET COMPANY, Newark, N. J.

PURE WHITE LEAD AND LINSEED OIL

Looks and wears better than any other paint. Specify it for every paint job and to be sure you're getting National Lead Company's White Lead. Look for *the Dutch Boy on the side of the keg.*

REMEMBER,

Mr. Yachtsman, our 8ft. 50lb. tender, 10ft. 95 lb. tender carries 10 men.

These boats tow straight and row easy. Goboco Motor Boats are built by Boat ***men*** for service.

Goble Boat Co., DESK Y Oswego, N.Y.

people in her cabin. She is fitted with a 5-horse-power motor, capable of driving her 5 knots per hour.

Mr. Bacon will probably enter this boat in this year's race to Bermuda, and "Larry" Huntington will sail her.

The following events are announced by the club: Beefsteak dinner and opening ceremonies, May 8; annual regatta, June 12; ladies' day, June 26; club cruise, July 3-5; Independence Day celebration, July 5; club race for power boats, July 17; Around Long Island Race, July 31; club cruise, August 7-21; summer regatta, August 28; club cruise, September 4-6; smoker and clam bake, September 12; closing ceremonies, October 2.

The club cruise will start August 7, the proposed itinerary being New Rochelle to Black Rock, to Thimble Islands, to Stonington, to Newport, to New Bedford, with a probability of continuing on to Edgartown and Nantucket.

Motor Boat Races of the Newport Yacht Club

Under the auspices of the Newport Yacht Club an open series of motor boat races, extending over a period of four days, will be held at Newport, R. I., during the first or second week in August next, probably during the N. Y. Y. C. cruise. It is proposed to provide classes for both speed boats and cruisers, and, with the idea of making these races a most successful event, the committee has secured very handsome trophies.

The courses in Narragansett Bay over which these races will be run are eminently suited for events of this kind.

The Narragansett Bay Yacht Racing Association will affiliate with this club, and they expect to have the co-operation of the Newport Yacht Racing Association.

Under the proposed plans these races will be an annual event at Newport. Hence, the committee desire to make this meet unusually attractive, and every effort is being made in that direction.

Edgewood Yacht Club

The Edgewood Yacht Club has just completed its new house in place of the one destroyed by fire a year ago. It is the largest and finest on Narragansett Bay, and will rank well with any in the country. It is expected that the 1,000 mark in membership will be reached before the opening on May 29. Commodore Dutee W. Flint, of this club, has offered a special trophy for a series of two races for the 18-foot class, and there is still another cup offered for a 25-mile race within the Bay.

Houseboats for American Waters

(Continued from page 399.)

the other design. The sides in both these boats should be covered with weather boarding in preference to shingles, as it is cheaper and looks better on the inside, particularly where it is left unfinished, as is the case on most houseboats. A musician's room weighing about 450 pounds had better be used for this boat, and 5/8-inch chain would be advisable.

This boat would cost from $1,000 to $1,200 if built in a yard, and approximately half that goes into the cost of material. It is almost too large for an amateur to attempt, particularly without the help of a carpenter or boat builder.

The figures given here are based on prices in the vicinity of New York, those being higher than in other ports in the country. As stated, these figures do not include fittings of any sort, as a price covering these would be misleading. A small or large amount may be expended in these things, and it is better to let the owner purchase such articles as best suit his requirements and pocket book.